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# **AGRICULTURAL ECONOMICS AND SOCIOLOGY**



# MONTHLY BULLETIN

OF

## AGRICULTURAL ECONOMICS AND SOCIOLOGY

### THE COURSE OF THE AGRICULTURAL DEPRESSION IN 1931-32.

#### I. — THE STRUCTURAL BACKGROUND OF THE DEPRESSION.

In 1931, the world economic crisis entered on its third year, and as it developed and spread to new countries and to branches of production and trade which, hitherto, had remained relatively immune, the nature of this phenomenon, unprecedented in its violence and its extension, became increasingly evident. Indeed, what at first may have appeared as a chance coincidence of cyclic depressions in both agriculture and the manufacturing industries, has now begun to assume a wholly different aspect.

After having followed the course of the world crisis for a period of now over three years, one is driven to the conclusion that, at least in so far as the fundamental developments of the depression are concerned, they cannot be fitted into any possible scheme of cyclic economic fluctuations. Cyclic fluctuations of various wave-length may, indeed, be responsible for the appearance of ripples on the surface of the main current of the depression, but the depression itself, which involves the headlong decline in prices and in economic activities, is a phenomenon of a different nature. The more one observes post-war economic developments, the more clearly one comes to realise the essentially structural nature of the crisis. Under many aspects, the economic organisation of the world to-day differs from the one which had existed before the war, and if economic life is to continue and to expand, it must adapt itself to changed conditions. The adaptation to changes in the structure of world economy is, however, a lengthy and difficult process, and while it slowly progresses maladjustments and friction are unavoidable.

Examples of structural transformations in world economy, which follow on great technical and commercial revolutions and mark the beginning of new stages in economic and social development, are naturally few and far between. Moreover, hitherto, they have generally taken a considerable time, and the great industrial and commercial revolution which brought the present economic and social organisation into being had extended, from beginning to end, over a century. It culminated in the emergence, from an agglomeration of essentially isolated national economies, loosely linked together by a certain amount of international trade, of a system of world economy based upon a world market. This system was in itself the creation of the new industrial technique and rested on the rapid transport of bulky commodities by rail and by sea, on large-scale

factory production for world-wide sale, on an international currency assured by the universal adoption of the gold standard, and on the free international movement of goods, capital, labour and enterprise. This economic system, which was evolved in the course of the prolonged depression of the closing quarter of the nineteenth century, by the time the World War brought it to an end, was still vigorously growing and extending its hold over new continents. Expansion was the vital need of this system, and the existence of a world market was for it a necessity and provided it with a safety valve by allowing any national over-production to be distributed over a wide area and thus absorbed, without permitting local gluts to develop into prolonged depressions. The system of world economy was equipped with an industrial, commercial and financial machinery which it had evolved in accordance with its requirements, and which generally insured its reasonably smooth working. Barring certain exceptions in the case of industries of special national importance, the principle of international division of labour, ensuring possibly high net returns on the capital and labour invested in production, was followed, even if unconsciously.

In the present case, stupendous technical and economic changes were crowded in the space of less than two decades. The accident of the World War, following on the rapid succession of technical inventions, and itself giving a strong impetus to their development and their practical application, has so much precipitated a process which, otherwise, would have taken many years to develop, that the economic system was allowed no time in which gradually to assimilate the innovations.

In our review of the agricultural situation in 1930-31 (1), while discussing the origin and nature of the present world crisis, we have pointed out how far the world, since the war, had travelled away from its former economic organisation. Recalling what had been said there of the causes responsible for the depression, one can realise that, considered as a whole, they really involve very far-reaching changes in the structure of world agriculture, industry, trade and finance. In order that clearer insight may be gained into the developments which took place in the course of 1931-32, and which resulted from the gradual accumulation of maladjustments and strains in the economic system, a brief outline of at least the most important structural changes in world economy will be given below.

If we consider the present structure of world economy as a stage in the process of structural transformation and adaptation, we shall see that it had been reached by a process in which three successive groups of structural alterations have been superimposed upon each other. Indeed, in the pre-war economic system there were going on certain processes of change generated in the natural course of technical and economic evolution, which, in the course of time, were bound to modify its organisation. These changes, due to the normal growth of the social organism, became eventually incorporated in the post-war economic system. Superimposed upon them, and sometimes accentuating their

(1) *Monthly Bulletin of Agricultural Economics and Sociology*, January 1932, and "The Agricultural Situation in 1930-31", Chapter I.



effects, sometimes calling counter-tendencies into being, came the structural changes produced by the war and by its immediate consequences, political, financial and economic. Finally, during the post-war period, and especially since the beginning of the present crisis, new influences came into play, which, in their turn, brought about structural changes in the economic system.

Technical invention and the large-scale investment of capital in the industrial development of countries hitherto essentially agricultural, were the two features of pre-war economy which have, probably, exercised the most powerful influence upon the structural evolution of modern economic organisation. The development of the internal combustion engine, especially in connection with road transport and haulage, as well as that of the industrial utilisation of electrical power, date from the beginning of the twentieth century, but have been enormously stimulated by the war, which raised them to the position of decisive factors in the transformation of the economic system. When, before the war, the countries possessing large surpluses of capital invested it abroad, and especially in overseas countries and in the East, in the development of new industries based upon the natural wealth and the labour resources that were available there, they prepared the way for the shifting of the centre of gravity of industrial production and trade towards the East and the Western hemisphere, which was one of the effects of the war. Indeed, with so large a part of industrial Europe, which was still indisputably the "workshop of the world" in 1914, put more or less out of action by the outbreak of hostilities, and then having had to concentrate upon the production of war material and other necessities, the young industries of Japan, India and some other Eastern countries, not to speak of those of America, were given a powerful impetus and gained a footing in markets which, hitherto, had depended on imports from Europe. The war over, it was not easy for the former belligerent countries to regain their position in the markets thus temporarily lost, the more so that their competitive power was seriously weakened by the financial legacy of the war, which tended greatly to increase their costs of production. The war, indeed, greatly accelerated the process of growth of industries, the foundations of which were laid by the investment policy of the preceding decades, in other parts of the world. An example of this development was the iron industry of British India, the output of which had increased more than fourfold during the decade following 1914. The cotton industry of India and Japan is another. On the morrow of the war, the addition of the output of these newly developed industries in other parts of the world to the restored or even increased productive capacity of European industrial countries, was bound to create difficulties and to cause serious dislocations in the currents of international trade.

The development of the internal combustion engine in its application to road transport had manifold consequences, the combined effects of which are little short of revolutionary. It not only diminished the traffic on railways and their earning capacity, but had other important effects as well, industrial and financial. Financially, it deprived railway securities, one of the most important pre-war forms of capital investment, of much of their former attraction. Industrially, it diminished the need for new railway lines, which in many cases

could be replaced by roads, and thus reduced the demands made by railway construction upon the iron and steel industries. Besides, the development of motor transport brought to the front two industries which, hitherto, had been relatively of minor importance, but now came to occupy a place beside iron and coal both on the capital market and in the evolution of colonial and international policy. Mineral oil and rubber, as key industries in modern civilization, owe their position to the progress of the internal combustion engine.

Considered from the agricultural point of view, the rapid development of mechanical road transport was also an event of vast significance. Its two effects most important for the structure of the agricultural industry, were the shattering of the sheltered position formerly occupied by the production of fresh milk and some other highly perishable agricultural and horticultural products and the reduction it caused in the consumption of feed grains and hay. Indeed, districts in which the production of fresh milk was possible, before the advent of the motor-lorry or van, were confined to the immediate neighbourhood of towns or railway stations, and the quasi-monopoly of the farmers in these localities was for them a great economic advantage. Now, the motor-lorry has changed the position completely, by permitting these formerly sheltered branches of production to be extended over far larger territories, with the result that when, in their flight from the depression, farmers turned in their numbers to these branches, they also became increasingly affected by the crisis. At the same time, the substitution of the motor for horse power in the cities and the increasing mechanisation of the armies, could not fail to exercise its effects upon the demand for oats, barley and hay, thus contributing to the depression of the prices of these products.

Yet, in its revolutionising effect upon the agricultural industry, more important still was the development of the internal combustion engine in its application to purely agricultural work, in the form of the motor tractor. Combined with the harvester-thresher, the tractor, since the war, has been certainly one of the most important factors in the structural transformation of agriculture and in the creation of those maladjustments and dislocations which are largely responsible for the present depression.

The development of mechanisation in agriculture was greatly stimulated by the war, not only because of the technical progress achieved at that time, under pressure of military requirements, in the evolution of the caterpillar, but also because of the vital importance of assuring the highest possible output of agricultural products with a minimum expenditure of labour.

Combined with the disappearance of Russia, as an exporter of cereals, from the world market, and her replacement during and since the war by overseas countries, the progress of mechanisation was bound to cause serious dislocations in the organisation of world agriculture. Indeed, the structure of agricultural production and of trade in agricultural products was largely transformed by the fact that the place of Russia, whose production increased slowly and gradually, along with the growth of her agricultural population, and whose exports of wheat showed even a tendency to diminish with the expansion of her industry and the consequent increase in the demand of the

home market, was taken by the countries of the New World. Their agricultural organisation, largely based on production for export, on abundant land and on an extensive system of cultivation, was essentially different from that of Russia, and permitted them to extend the area of crops very rapidly. The two limiting factors in the extension of their agricultural production were prices and labour; and when the war raised the prices sufficiently to encourage production, and labour-saving machinery brought a solution to the labour problem, they were in a position to respond to the demands made on them by Europe almost immediately. The balance of production for the world market was thus suddenly shifted from the Old to the New World, a development which, welcome as it was under pressure of war-time emergency, was pregnant with dangers in the long run.

Indeed, though the cultivation in the Old World cannot be extended rapidly, it has the advantage that it increases apace with the growth of agricultural population and its diffusion by way of internal colonisation over hitherto unoccupied territories. It is, accordingly, generally able to consolidate and to hold the positions it has conquered, and the question of retreat as a rule does not arise. In the New World the position is different, and when, with the restoration of European agriculture after the war, the increase in production, which was achieved at short notice, began to be felt as an embarrassment, there arose a difficult situation. The greatest increase had taken place in what were practically single-crop regions in the United States, Canada, Australia and the Argentine, and a reduction in the wheat area was made difficult by the absence of any paying alternative to the cultivation of wheat. As a result, in the United States, for instance, any reduction that had taken place in the area sown to wheat between 1926 and 1929 was confined to the North-Atlantic and New England regions, with more developed and varied farming, while in the North-Central, South-Central and Western regions, in which extensive wheat-growing was the principal type of production, there has actually been an increase in the acreage. Here, with no alternative open to them, the farmers tried to make good the fall in prices by an increase in output. The position was essentially similar in the Prairie Provinces of Canada and in Australia, the latter having made a deliberate attempt to combat the effects of falling prices by an increase of production at lower cost per bushel.

Thus a situation was created in which the world market had to reckon with the continuous production of a considerable surplus of wheat under uneconomic conditions. This surplus, so far, it has not been possible to eliminate, with the result that large and increasing stocks have been accumulated in the principal exporting countries.

This change in the structure of agricultural production took place at a time when the demand for wheat and other cereals was in course of diminution, owing to changes in human consumption following the rise in the standard of life in the more advanced industrial countries, and to the falling-off of the demand for fodder due to the mechanisation of road transport. It in no wise contributed to the restoration of the balance between supply and demand, either in agriculture or in industry; it tended rather to make the position worse.

Since before the advent of mechanisation, the extension of the area under crops, in the New World as well as in the Old, proceeded apace with the growth of agricultural population, any increase in agricultural production, apart from fluctuations due to natural causes, was accompanied by an increase in consumption and by the creation of fresh purchasing power in the hands of the producers. The mechanisation of agriculture now permits an enormous extension of cultivation in the New World to be achieved almost entirely by the application of labour-saving machinery, and the increase in agricultural production is, accordingly, largely independent of that of agricultural population. The progress of agricultural production is divorced from that of colonization, and new tracts of virgin land can be, and actually are, ploughed up without the simultaneous creation of new settlements of productive population and of widely diffused purchasing power, which acts as a stimulant for all branches of economic activity. In so far as the growing mechanisation of agriculture in the New World reduces the need for labour and the opportunities of employment and profit of a number of people dependent on the land for a living, it tends actually to diminish that effective demand for consumption goods by a large mass of small consumers which is the real foundation of industrial prosperity.

Such a development in the New World cannot fail to have very serious effects upon the international movement of agricultural population, and, indirectly, upon that of industrial labour as well, and to exercise a very dangerous influence upon the economic and social balance of the world at large. While before the mechanisation of farming, overseas countries were interested in encouraging the influx of immigrants, especially belonging to the agricultural classes, now this policy of encouragement is reversed, and restrictions are imposed on immigration. In the social and economic balance of the Old World, as taking the long view — in that of the New World as well, the international movement of population is an exceedingly important factor, in so far as it permits the available agents of production to be combined in the most expedient way and potential pauperism to be converted into a producer of new wealth. Europe, the outlets for the surplus population of which are closed, is now placed in a position in which an increasing number of people depends on a diminishing income from the land. At the same time, the New World, the economic progress of which depends in the first instance on the exploitation of its own resources, which demands a combination of growing population and increasing investment of capital, needs a harmonious development of supply and demand as a basis for economic expansion. For it, the increase in population is an essential condition of progress, and in the long run it cannot escape from the effects of the growing disequilibrium between the production of goods and the increase in population which ensures for them an effective demand. In the economic structure of the post-war world the balance here is dangerously upset.

Another important aspect of the situation created by the development of extensive production in the New World, are its effects upon the position of the peasant farmer in the Old World.

The technical revolution in agriculture, which leads to the adoption of mass-production methods in largely mechanised cereal farms overseas, has an

influence upon the position of the peasant farmer, somewhat similar to that of the industrial revolution of the nineteenth century upon the independent craftsman. For a time, the peasant goes on growing the crops affected by oversea competition, at the expense of a lowering of his standard of life. In the process, he naturally reduces his effective demand for manufactured goods, with results detrimental to industrial production. If and when the limits of such compression of expenditure are reached, and competition still makes itself felt, there remains the alternative of either liquidating and selling out, or changing over to some other branch of agricultural production which enjoys a relatively sheltered position. Just as some craftsmen have been able to survive the industrial revolution by concentrating on the production of articles of more or less individual taste, in which industry mingles with art, so peasant farmers can escape competition by diverting their efforts to branches of agriculture in which mass production is either technically impossible, or economically does not pay. Dairy farming, the raising of animals, poultry, vegetable and fruit-growing have, indeed, largely provided a means of escape for the threatened peasants and small-holders, whose position as arable farmers became untenable owing to oversea competition. Such transition, on the large scale demanded by present conditions, depends for its success on the existence of a market sufficiently large and wealthy to absorb the increase in the finer and more expensive products of farming at remunerative prices. Now, however, the industrial depression causes so heavy and continuous a reduction in the purchasing capacity of the non-agricultural population, that conditions are by no means favourable to such a transition, and though it takes place on a considerable scale in certain countries and regions, it generally tends to depress the prices of the products the output of which has been increased.

Indeed, under present conditions, in the agricultural countries of Europe dependent on the export of their products, the peasant population, in spite of the drastic agrarian reforms carried out in their favour since the war, find their standard of life reduced to a level often actually lower than that of landless agricultural labourers before the war and the depression. In the cereal-importing countries of Europe, the great bulk of the peasantry are only enabled to make both ends meet, and that rather precariously, owing to high tariff barriers which keep overseas competition at bay. Yet, even in the countries where protection is most effective, the standard of life of the farmers is generally lowered. Indeed, the traditional agrarian organisation of Europe, on which for centuries had rested its social, economic and political system, is now passing through a period of severe trial. To save it from dissolution, energetic protective measures are being applied, which enable the peasant population to live, though on a reduced scale of well-being, and to go on producing, though their production, if left to itself, would be submerged by overseas competition. The peasant, for so long the most solid element in the economic system, is now faced with a problem of vital importance: that of finding ways of adaptation to the changed structure of the agricultural industry.

In all this revolution, technical and economic, which has upset the balance of agriculture all over the world, the development of the internal combustion engine

has played a part of enormous importance. Its influence can only be compared with that of the railway and the steamship upon the agricultural evolution of the latter part of the nineteenth century.

The modern development of electrical power is another technical factor the influence of which upon the structural evolution of the economic system can hardly be overestimated. The immediate effect of the extensive use of electricity for power purposes is that it makes industries increasingly independent of the proximity of coalfields, thus shattering the quasi-monopoly which had hitherto been enjoyed by certain countries or districts in this respect. When water power can be used for the generation of electrical current, the independence of industrial production and of the railways from coal becomes complete, and regions which had hitherto lacked the power necessary for their industrial development are enabled to appear on the world market as industrial producers. Though still relatively little used in farming, in the future development of agriculture and of allied rural and agricultural industries electrical power is also bound to play an important part. The extent to which the substitution of water power for coal in the production of electrical current progresses, is shown by the fact that the aggregate output of current generated by water power is estimated to have doubled between 1913 and 1925. Since then, many new powerful installations have been completed, so that in 1932 the output should be much larger than it was in 1925. According to the same estimate, the electrical power output of the installations existing in 1925 amounted to at least 60 milliards of kilowatt-hours, which represented the equivalent of 60 million tons of coal (1). While, in the nineteenth century, any extension of industry or of railways involved an increased demand for coal, the growing use of water power now makes industrial development largely independent of coal for the generation of energy. The dislocation this is bound to produce in an economic system of which coal and iron were the two principal mainstays ever since the industrial revolution of the nineteenth century had brought it into being, can easily be imagined. The great slowing-down in the construction of railways, to which we have referred above as a consequence of the development of mechanical road transport, has also deprived the iron and steel industries of one of the important stimuli to expansion.

At the same time, modern technical developments, especially in connection with the electrical industry and aircraft construction, have greatly increased the importance of non-ferrous and coloured metals. Indeed, oil-fields, coloured metal deposits and rubber plantations have acquired an altogether exceptional importance in the present-day economic organisation. As a condition of economic power in the modern industrial civilisation, their possession tends to approach in importance that of coal and iron deposits in the nineteenth century, not because these latter have become less necessary, but on account of the essential complementary character of these materials in the scheme of modern economic development. That this involves very important dislocations in the

(1) B. HARMS. Strukturwandlungen der Weltwirtschaft. *Weltwirtschaftliches Archiv*, 25 Band, Januar 1927, Heft 1, p. 10.

economic system and in international trade, hardly needs stressing. International relations and the trend of colonial policy of the industrial nations, which have to supplement their national resources by assuring regular supplies of one or more of these essential elements from outside, are, not unnaturally, seriously affected and modified by this factor.

Along with these technical developments which have so far-reaching an influence upon the structural evolution of the economic system, and which contribute to making the present economic organisation so different from that of the pre-war world, other developments should also be noted. Among these, the continual extension of the field of concerted and planned action in industry and trade is one of the most remarkable and the most important in its influence upon the structure and the functioning of the economic system. This growth of organised efforts on the part of various branches of production aiming at the deliberate control of their output and prices, is largely due to the very fact that, in recent years, so many shifts and dislocations have taken place in the economic life of the world, that some sort of order must be evolved out of the existing chaos, and economic activities must somehow be organised. The importance of these attempts, by the constitution of cartels and syndicates, as well as by international agreements between such organisations, aiming at combined industrial action, to create nuclei of "organised economy", is very considerable and tends to increase. Whether or not they are the forerunners of a new era, in which organised and planned economy will replace the existing system, still, at least theoretically, based on the principle of free competition, is a question which cannot be discussed here. But the part they play under present conditions, by applying the principle of organised control to an increasingly large sector of the economic system, has a very great interest for the student of the present world crisis. In fact, by assuring a certain control over an important section of the market, they reduce the scope of automatic action of its apparatus of adjustment, and tend to throw all the burden of disorganisation upon the unorganised branches of industry and trade, among which agriculture is by far the most important. As Prof. Wagemann says, though organised economy (*gebundene Wirtschaft*) aims at stabilizing conditions, in actual fact the control of certain branches of economic activities tends to increase the fluctuations in the unorganised branches (1).

The attempts at concerted action, by industries in the form of cartels and other similar organisations, and by labour in trades unions, are certainly not the products of post-war development, and date from the pre-war economic system ; but since the war their development assumed far greater proportions and their influence upon economic life increased enormously. In Germany alone, cartels and similar organisations, which, before the war, numbered 500 to 600 in all, in 1925 had reached a total of well over 2,000, embracing all the most important branches of production. In other countries, even those where, before, the movement had made no progress, it has now assumed large proportions, with

(1) E. WAGEMANN. *Struktur und Rythmus der Weltwirtschaft*, p. 50.

the result that the field of "organized economy" now includes practically all the basic industries in the more important industrial countries of Europe. The branches so organised in Germany, France, Great Britain, Italy, Belgium, Czechoslovakia, Austria, Poland, Holland, Switzerland and some other countries, are the mining, metallurgical, metal-working, engineering, textile and chemical industries. The same applies to some other branches of production, such as the leather industry, the manufacture of foodstuffs, the electrical and some other industries, in certain countries in which they play an important part. By means of international agreements between national combinations, the scope of their action in certain domains is extended beyond national frontiers. It is estimated that, at present, of the total value of commodities exported abroad, the products of cartelised industries, whose prices are subject to control, account for as much as 70 to 80 per cent. in Germany, 38.9 to 48.9 per cent. in the United Kingdom, 46.6 per cent. in France, 12.4 to 25 per cent. in Italy, 44.3 per cent. in Czechoslovakia, etc. (1) It is clear from these figures, how important are the inroads made by "organised economy" into the world market. From the point of view of agriculture, the least organised of all industries, and the most difficult to organise, this development has a considerable importance, the more so that the organised group of industries includes several in which the farmer is vitally interested, such as the engineering, metal-working and chemical, on the one hand, and the leather, foodstuffs and textile, on the other.

All the structural changes of technical and economic nature, of which the most important have been outlined in the preceding pages, would have been sufficient to produce great dislocations and serious strains in the economic system, even if they had not been complicated by the war and its consequences.

From the experience of the depression which accompanied the birth of world economy in the course of the latter part of the nineteenth century, one can gauge the extent and the seriousness of the difficulties and maladjustment unavoidable in a period of growth and structural transformation of economic life. If, however, the process of economic expansion, such as that in which national economies have been merged together in the vast whole of world economy, must be painful, much more so must be a development in the opposite sense, in which economic life, which used to have the world for its playground, is again being forced back into narrow national frontiers, and that at a time when it has to shoulder an unprecedented burden of financial commitments due to the war.

The tendency towards economic isolation, involving the gradual breaking-up of the world market, and the overburdening of productive activities with unproductive charges, the two intimately connected with each other, are, indeed, the outstanding characteristics of the present structural evolution of the economic system.

One of the immediate effects of the war, the economic consequences of which were most far-reaching, was the creation of a highly complicated network of political frontiers which have cut across long-established trade routes and have

(1) UDO-HORST BYCHELBERG. Merkmale der gebundenen Wirtschaft, *Wirtschaftsdienst*, Heft 41, 14 Oktober 1932.



seriously impeded the relations among the producers and their markets. In spite of the fact that the economic consequences of such extreme division of territories which have for centuries formed economically organic entities have been forcibly brought home to all concerned, nationalism has so far proved too strong to allow a certain measure of economic co-operation or solidarity to be restored for the common good. Indeed, the painfully memorable experience of the war and of blockade was responsible for the development, even in countries least adapted to it by their position and natural resources, of an exceedingly strong tendency to economic self-sufficiency. The largely unconscious economic internationalism of the pre-war world, with its tendency to an economic division of labour among the various nations, according to their resources, was now replaced by national particularism, aimed at self-sufficiency and bringing about an uneconomic distribution of productive activities. Thus, a system of world economy based essentially upon the consideration of relative costs and tending to produce maximum net returns on labour and capital, was replaced by an organisation the basic principles of which are largely non-economic. Political and social considerations, which, though they have never been entirely absent among the criteria of national economic policy, had not, before, generally been allowed to override the dictates of economic expediency, since the war have been decidedly on the ascendant.

From the agricultural point of view, the effect of this was that the European countries, in which farming had severely suffered from the war, since its termination have been endeavouring not only to restore, but even to increase their agricultural output, with a view to becoming, as far as possible, independent of foreign imports of the principal foodstuffs. The psychological influence of the experience of war-time and financial considerations were combined here with the traditional policy of maintaining a peasant population on the land, in spite of foreign competition and of the decline in the purchasing capacity of the home market for the products of sheltered branches of farming, with the result that European agricultural production increased behind specially erected tariff barriers.

While, since the war, economic activities tend increasingly to be confined within narrow national boundaries, the world stands in greater need than ever before of scope for economic expansion. The legacy of debts, reparations and other unproductive expenditure which the war left behind utterly upset the financial balance of world economy and has had a profound influence on the structure of international financial relations and, through them, on that of world production and trade.

Indeed, in the pre-war economic system, international borrowing was one of the most important instruments of economic progress, and the international liabilities incurred were, in their bulk, secured on the increase of productive capacity they enabled the borrowing countries to achieve. The borrowing countries were in the position of concerns issuing debentures with a view to increase their turnover and their profits, out of which part was earmarked for the interest and repayment of the loans thus contracted. Relatively to the national wealth and income, as well as to the Budgets of the States and of the municipalities

contracting such loans, their amounts and the annual payments were moderate, even in the most heavily indebted countries. These payments, in the case of all international liabilities, public as well as private, were, as a rule, made by exporting goods either to the creditor country direct, or to other countries, the existence of a freely functioning world market permitting such settlements to be made with the greatest convenience to the parties concerned.

Since the war, the problem of international financial liabilities has assumed a wholly different aspect. These liabilities have increased enormously; moreover, they were due to unproductive expenditure and had no counterpart in new sources of national income. Though non-economic in origin, they were bound to exercise a strong influence on the currents of world trade, which they tended to divert towards the creditor countries, and more particularly towards the United States, as the largest creditor of all. Payments had to be made in goods, and so they largely were, in spite of the strongly protectionist nature of the United States tariff, which, since the passing, in 1930, of the Hawley-Smoot Act, became a more formidable obstacle than ever to the regular settlement of their accounts on the part of the debtor countries. The effects of this tariff, combined, as it is, with the financial liabilities of Europe to the United States, on the development of the world economic situation have been exceedingly serious, since by it she made it practically impossible for her debtors to pay her in goods except at prices which made production unremunerative. Goods had to be exported by them to other markets, already glutted, and there sold for whatever they would fetch, while debt payments were effected in cash. This naturally resulted in the exaggerated use of gold in the settlement of international accounts, and tended to increase the already excessive concentration of gold in the creditor countries, as well as to shatter the foundations of world currency. Besides, the countries whose markets were glutted with goods which could not be sold in the United States, were forced to raise their customs tariffs and impose other limitations on imports. This development, as it spread and became intensified with the aggravation of the depression, tended not only to reduce the scope of operations of the world market, but altered all its essential characteristics as an automatic regulator of the economic system. With all its wheels clogged by an accumulation of measures taken in self-defence by every separate country, the automatic machinery of adjustment worked no more; neither was any system devised to ensure the co-ordination of national effort and to replace a freely working by an organised economy.

The heavy burdens imposed by the war upon the economic system had another very important effect upon its structure and its working. Indeed, the pre-war economic system possessed a far greater flexibility than the present one, since this has been made exceedingly rigid by the accumulation of fixed financial charges under which it is smothered. In the post-war economic system, the enormously increased Budget expenditure imposes an inordinately heavy burden upon all branches of production and trade, thus placing obstacles in the way of their adaptation to changing conditions. With a large proportion of the expenditure of the nation, as well as of the overhead charges of business,

consisting of fixed items of unproductive outlay, the margin in which it is possible to effect the necessary adaptations is relatively small, and the cuts which have to be made in it to obtain any considerable reduction in total costs are unavoidably large and painfully felt. We have already had the occasion to point to the effects of heavy taxation upon the competitive capacity of former belligerent countries on the world market, and the consequent dislocations in international trade and in world production. These certainly are not the only effects of the overburdening of Budgets with unproductive expenses due to the war, and it is true to say that in aggravating the depression and intensifying the sufferings it inflicts upon the world, especially in the form of unemployment, they are, perhaps, more injurious still, as well as more absurd. In fact, as the greater part of the margin of the costs of production which lends itself to adjustment consists of wages, the industry, unless it diminishes its output, is faced with the alternative of either lowering wages, or else rationalising the processes of production and thus diminishing the number of people it employs. The more highly organised is labour, and the heavier the proposed reduction in wages, the more difficult it is to arrive at a solution of the problem of adjustment by the first of these two alternative methods, and the more strongly the industry is driven towards the adoption of the expedients known under the name of rationalization. This is, indeed, very largely the position in the most industrially advanced countries, in which labour, in the course of modern social evolution, increasingly tends to become part of the "tied-up" sector of the economic system, to use the literal translation of the German qualification in the expression *gebundene Wirtschaft*. An increase in unemployment results unavoidably, and, in one way or other, by directly subsidising the unemployed, by organising public works for their relief, or by other means, the State is called upon to intervene financially, and its Budget is swollen by new expenditure. The increase in the Budget is naturally transferred to production and trade in the form of additional taxation, with the result that the fixed elements of their costs are again increased, and so on, *ad infinitum*. The absurdity of the whole situation is patent; and yet it is a standing characteristic of the working of the post-war economic system, top-heavy with the accumulation of liabilities due to the war and essentially unproductive.

This situation, bad as it has been always, since the beginning of the present depression is continually growing worse. In the face of huge standing liabilities, the receipts both of the Treasuries of the States and of private business tend to diminish along with the disorganisation of industry and trade and with the fall in commodity prices. While the charges borne by the Budgets of the State and of public bodies, by industry, trade and individual households remain nominally the same, their real weight is actually increased in proportion to the fall in prices. Even a very moderate Budget — an exceedingly rare phenomenon under post-war conditions — can become an unbearable burden when prices have fallen nearly 50 per cent. as they have done in the third year of the depression. Budgets loaded with unproductive expenses to an extent which made them excessive even before the depression, were bound to become absolutely unmanageable and insolvent, unless an appearance of solvency could temporarily be achieved by heavy

inroads upon the nation's capital resources or by the widespread abuse of short-term credit facilities.

What has been said here about public finances, largely applies to private liabilities, and especially to those arising out of borrowing by agriculture, industry and trade. Loans contracted under entirely different conditions, dating, in the case of mortgages and debentures, often to pre-war times, lost all connection with the circumstances under which they had been contracted or with calculations on which they had been based. Yet these, at least, possess the advantage of having been contracted under more favourable conditions, when credit was cheap. Post-war loans, made under conditions of an unprecedented dearth of capital, are a much heavier burden upon production and trade. Gross profits, especially in farming, have not infrequently fallen below the net interest of the debts, with the result that they cannot be met, and in the countries most affected by the crisis, arrangements have to be made by the banks in order to avoid wholesale foreclosures. For some time already the position with regard to the mortgage indebtedness of agricultural land has been exceedingly grave, especially in the countries of Central and Eastern Europe suffering from a chronic shortage of capital, where land credit has always been expensive and scarce. In 1931, an attempt was made by the League of Nations to organise an international land mortgage institution which would provide funds for the extension of their lending operations to the national land banks and help them to reduce the cost of long-term and intermediate credit to agriculture. The projected credit institution, however, has not so far materialised, owing to the financial crisis which broke out while the Convention was being approved and signed in Geneva.

This leads us to the examination of post-war changes in the structure of the currency system and of the money and capital market, and of their influence upon the working of world economy.

The outstanding feature of the post-war situation with regard to the organisation and functioning of the currency and credit system, not unnatural considering the condition of international indebtedness and the strain it put upon public finances, was the decisive importance which the balance of payments acquired as a criterion of monetary and credit policy. Indeed, it may be said that the imprint of this constant preoccupation with the problem of providing the wherewithal to meet foreign liabilities is borne by all the financial and commercial policy of the post-war period, to which it lends a decidedly mercantilist colour.

This mercantilist bias of modern policy in the field of international trade, currency and finance, apart from the constant pressure upon the balance of trade exercised by means of restricting imports, found perhaps its most definite expression during the period of stabilization. Indeed, when, between 1923 and 1927, European currencies, disorganised by the war and the subsequent wave of inflation, were again stabilised, and a general return to the gold standard or its practical equivalent was achieved, the dominant preoccupation of most countries was that their currencies should not be under-valued on the world market, since such under-valuation would increase the burden of their foreign liabilities. This in-

volved deflation and a rupture between the exchange value of the national currencies so treated and their internal purchasing power, and necessitated recourse to artificial measures for the support of exchanges which, if left to themselves, would have been brought down to their natural level by the currents of trade which the divergency of price levels would have produced. Had these currents been allowed to flow towards the markets to which importations were encouraged by the premium on exchange, no intervention on the foreign exchange market could have prevented the specific depreciation of the over-valued currencies. Accordingly, if the rates of exchange were to be maintained, as required by considerations of the balance of payments, trade currents had to be dammed, and the trade balance kept on the right side at all costs. Hence, trade restrictions due to financial considerations were added to the barriers erected by economic nationalism across the trade routes, and economic activities which alone could provide the means of meeting foreign liabilities, suffered unavoidably from the effects. The pre-war position was reversed. While, then, economic considerations were uppermost, and financial solvency was looked upon as resulting from economic progress, now the balance of payments, overburdened by unproductive charges, became an obsession, and the interests of economic development were relegated comparatively to the background.

The gold standard itself, though nominally restored, did not in effect provide world economy with an automatically working international currency. From what has been said above of the rupture between the internal and the external purchasing power of currencies which have nominally been restored on the gold basis, and of the measures used to maintain the rates of exchange in spite of the existing disparity of prices, it is obvious that the gold standard was not effective. The concentration of gold, mainly due to the post-war condition of international financial liabilities combined with the restrictions imposed upon the trade in commodities, would hardly have assumed its actual proportions, had the gold standard been allowed to function properly. As a matter of fact, this was not the case. While in the countries whose gold was being drained away, credit suffered a painful contraction and the deflation was aggravated, in the importing creditor countries the additional quantities of metal were actually hoarded, without being allowed to exercise their effect upon prices by an expansion of credit. Thus, not only was the world market not allowed to function properly by trade barriers, but it was deprived of its instrument of circulation, since the gold standard, though nominally restored, was not permitted to be effective and to help the restoration of lost equilibrium.

Great changes have also taken place in the structure and working of the money and capital market. Since the war, the money and capital lending activities have become largely decentralised, the position of London as the world's financial centre having been challenged, especially by New York. This change was important not only in that a large part of the business of international finance had passed to institutions which did not always possess the required experience and organisation, but for reasons even more fundamentally important. To ensure the financial service on an international scale, a country must possess large surpluses of capital which can be more profitably employed by being invested

abroad than at home, the home market being saturated with capital resources. This was for a long time what made London the world's financial centre, enabling it to ensure a steady flow of investment abroad, as well as to provide for its need of short-term financial facilities. A country, the undeveloped wealth of which still demands all that it can afford in the way of capital, and in which vast opportunities of investment at home compete for capital and credit with foreign borrowers, while under certain conditions it may be in a position to lend abroad on a large scale, is not adapted to the part of financial centre. The position of the United States is a case in point. Moreover, an essential condition of financial supremacy, without which no country can become, in the true sense of the word, a great international financial centre, is the possibility for the borrowers to pay their debts in goods. The highly protectionist policy of the United States, which, instead of having been mitigated since, by the war, it became a creditor instead of a debtor country, was actually reinforced by the Hawley-Smoot tariff of 1930, militates, therefore, against its really assuming the part of the world's money and capital market. Since the war the United States had, indeed, been in a position to lend abroad on a large scale, but under normal conditions, it is not so organised as to possess large surpluses of capital for investment abroad ; and in the struggle between the rival claims of home and foreign business upon the investing public, home investment naturally prevails.

One of the features of the post-war economic system, which distinguishes it profoundly from pre-war economy, is the great lack of confidence in the future, due to political and economic unsettlement which creates an atmosphere most unfavourable to the progress of business. While before the war, the economic development of the world had been assured by the investment of capital, now the capital market seeks to avoid committing itself for any considerable period ahead, and the sources of capital and long-term credit, already depleted by the war and inflation, have practically dried up. Except for brief periods of apparent revival of confidence, of which the most important had followed the stabilization of currencies and had lasted from about 1924 to the beginning of the present crisis in 1929, capitalists were shy of investing money, especially abroad, and money which used formerly to be invested sought safety, rather than profit, in bank deposits and short-term lending operations. As distinguished from the capital market, the money market, as a result of this tendency, overflowed with resources, and short-term credit was relatively readily available and generally cheap. Indeed, the banks found difficulty in employing their deposits profitably, the more so that the great diminution in the creation of fixed capital by the investment of savings naturally caused a reduction in the normal demand of industry and trade for short-term credit. With long-term credit facilities practically unavailable, and short-term credit being relatively plentiful and cheap, a highly anomalous and dangerous position was created, as both business and public authorities were encouraged, when hard pressed for money, to have recourse to short-term borrowing for meeting expenses which, if they could not be met out of current receipts, should have been covered by the issue of long-term loans or debentures. This, indeed, has happened in numerous cases and on a very large scale in the course of the last few years, and has largely con-

tributed to the development of the financial crisis, of which more will be said later.

This change in the structure of world economy, involving the practical cessation of investment and long-term credit, is essentially a passing phase of modern economic evolution, due mainly to the lack of confidence in the political, social and economic stability of the world. Yet this lack of confidence has lasted so long, has been so much increased by the present depression and has so great and disastrous an effect upon the international circulation of capital, that it has to be reckoned with as a powerful factor of disintegration in the economic system. Any attempt at dealing with the depression and reviving economic activities will depend for its success on the restoration of confidence, as this alone will enable capital once again freely to move from the financial centres to countries which need it for their development.

Summing up what has been said above of the structural transformations which took place in world economy since the war, we can see that they left practically no part of it unaffected, and necessitated re-adjustments and adaptations in every country and in every branch of economic activities.

Production, in industry, as well as in agriculture, had been affected by the stupendous technical progress of the twentieth century, a progress greatly accelerated by the war. The productivity of human labour had increased enormously, and, especially in agriculture, mechanisation having made the extension of production largely independent of the increase in agricultural population in overseas countries, agricultural colonization and the international movement of population have been impeded. New possibilities of industrial development have been opened, new products and new agricultural and industrial regions, have come to the fore, and the currents of world trade have largely changed their directions. Consumption had changed considerably, partly owing to the rise in the standard of life of the masses in the advanced industrial countries, partly as a consequence of changes in production and of the development of mechanical transport. The mechanism of exchange has also changed, especially in so far as the gold standard, though restored nominally, was not allowed to function and to have its effects upon prices. The money and capital market were affected by the lack of confidence in investment, by the shortage of capital due to its wholesale destruction in the war and during the subsequent inflation and by the slowness of its accumulation due to the extreme burden of unproductive charges borne by production and trade.

Considering the economic system as a whole, the most important structural change that has taken place since the war is the almost entire cessation of the free international circulation of goods and of the agents of production — capital, labour and enterprise — of which the free migration in search of profitable employment was one of the essential features of the pre-war economic system, as well as the principal factor of its ceaseless expansion.

While a high degree of flexibility was required of the economic system to enable it to adapt itself to these structural changes, it was precisely in flexibility that it was most lacking. Indeed, apart from the changes in production and trade, the economic structure of the modern world is distinguished by other

features, which contribute in making it rigid and unadaptable. Nationalism, with its particularist economic policy breaking up world economy into closed national units and destroying the world market ; the heavy burden of war debts and other unproductive expenditure incurred in connection with the war ; the haphazard intervention of Governments and private business combinations in the course of trade and the movement of prices ; and, last but not least, the practical impossibility of achieving a better and more efficient distribution of population and of other agents of production among the different countries and the different continents, owing to the restrictions imposed on the movements of capital, labour and enterprise—all this unavoidably tends to make the economic system excessively rigid and to reduce its power of adaptation.

The self-adjusting machinery of the world market, which used formerly to ensure the balance of world economy and its expansion, had been put out of action, and the productive forces, confined within the frontiers of closed national economies and smothered under a load of unproductive expenditure, cannot be expected to bring the utmost returns, of which they are capable only in international co-operation.

It may be contended, as it often is now, that the machinery of automatic adjustment, which even before had not always worked smoothly and efficiently enough, has had its day and should now be replaced by a system deliberately planned and co-ordinated. The point may be argued, and there certainly are signs of a tendency towards the substitution of an organised for a free economic system, not only among theoretical thinkers, but in practical business and administration as well. But the world, so far, had not yet evolved a system of planning, or even of co-ordination, of economic activities, and what is actually being done is sporadic and confined within national frontiers, while its effects upon the world market are ignored. These, however, cannot be ignored with impunity, and if the path of evolution of our economic system is that which is traced by Sombart (1) for "late Capitalism", and leads through isolated national planning, it will unavoidably involve a severe lowering of the standard of life and in some cases sheer misery. The system of world economy, as it had been evolved in the nineteenth century, made the modern stage of economic civilization and comfort a possibility ; and without sacrificing some at least of its conquests in well-being and culture, international economic co-operation, be it spontaneous or deliberately planned and organised, cannot certainly be dispensed with.

## II. — THE FINANCIAL CRISIS AND THE WORLD MARKET.

In the course of the agricultural year 1931-32, the headlong decline of prices on the world market continued, bringing with it a serious aggravation in the economic position generally.

The Index Numbers of wholesale prices of agricultural products, which are available for certain countries, tend to show that the depression, which became

(1) W. SOMBART. *Die Zukunft des Kapitalismus*.



especially pronounced from 1930, was practically universal, though the extent of the fall in prices varied considerably from one country to another

*General Price Indices of Agricultural Products.*

(First quarter of 1929 = 100)

<i>Quarters :</i>	England	Estonia	Finland	Germany	Hungary	Italy
1929, I . . . . .	100	100	100	100	100	100
1930, I . . . . .	100.0	80.0	82.2	87.1	68.7	82.3
III . . . . .	95.1	69.3	76.6	86.4	61.9	75.4
1931, I . . . . .	87.5	64.0	69.2	79.9	60.4	63.7
II . . . . .	85.4	64.0	66.7	81.4	62.4	65.1
III . . . . .	83.8	62.8	64.5	77.5	64.2	61.4
IV . . . . .	79.2	57.7	67.3	73.0	66.4	62.4
1932, I . . . . .	81.2	52.8	72.6	70.9	67.2	64.5
II . . . . .	79.2	49.3	67.3	70.2	62.7	65.4

	Netherlands	Poland	Argentina	Canada	U S A.		New Zealand
					B. A. E.	B. L. S.	
1929, I . . . . .	100	100	100	100	100	100	100
1930, I . . . . .	89.3	78.4	89.5	99.7	95.6	92.3	80.5
III . . . . .	86.4	75.0	83.1	78.3	80.9	79.5	75.3
1931, I . . . . .	77.1	64.0	60.1	61.9	67.6	67.3	57.4
II . . . . .	78.2	71.4	59.6	60.2	63.7	63.7	59.7
III . . . . .	70.7	63.4	59.5	55.6	55.4	59.3	50.6
IV . . . . .	61.1	63.3	63.1	55.8	50.2	54.4	58.3
1932, I . . . . .	57.9	58.7	58.5	53.2	44.9	48.3	51.4
II . . . . .	54.6	63.7	56.6	50.8	41.2	44.5	—

With the two exceptions of Italy and Poland, the decline in 1931-32 was universal, and in the second quarter of 1932 the index numbers of prices of agricultural products in the exporting countries registered losses ranging from 43.4 per cent in Argentina to about 55-59 per cent. in the United States. Though these figures reflect the actual losses of the agricultural industry only in part, this part, if expressed in terms of national wealth and national income, represents an exceedingly heavy reduction. Thus, according to estimates recently made in Canada, the gross agricultural revenue of the Dominion fell from 1,826 million dollars in 1927 to 880.2 million dollars in 1931, a diminution of roughly 52 per cent. In the course of the year 1930-31, the net agricultural revenue of Canada was estimated to have fallen about 27 per cent. One can well imagine the disastrous effects of so heavy a diminution in the principal branch of production of agricultural countries on their public finance and their purchasing capacity as consumers of imported and home-made manufactured goods.

Indeed, the various aspects of the world crisis — agricultural, industrial and financial — were more closely interlocked in 1931-32, in the third year of the unprecedented depression, than ever before. The fall in agricultural prices in 1931-32, as before, was not an isolated phenomenon, but part of a general price movement.

*General Index Numbers of Wholesale Prices.*

(1913 = 100)

Years and months		Germany	France	England (B. of T)	Italy (Bachi)	U. S. A. (B. L. S.)	Canada	Aus- tralia
1913		100	100	100	100	100	100	100
1920		—	—	307.3	—	221.2	243.6	227.9
1925		141.8	—	159.1	592	148.3	160.3	169.5
1926		134.4	695	148.1	604	143.3	156.3	168.4
1927		137.0	642	141.6	501	136.7	152.7	167.0
1928		140.0	645	140.3	462	140.0	150.6	164.7
1929		137.2	627	136.5	447	138.3	149.4	165.7
1930		124.6	554	119.5	386	123.6	135.3	146.7
1931		110.9	502	104.1	330	104.6	113.4	131.3
1931	VII	111.4	500	102.2	324	103.2	112.0	131.3
	VIII	110.2	488	99.5	322	103.3	110.8	128.6
	IX	108.6	473	99.2	319	102.0	109.4	127.8
	X	107.1	454	104.4	322	100.7	110.0	128.9
	XI	106.6	447	106.4	320	100.6	110.3	131.3
	XII	103.7	442	105.8	319	98.3	109.8	131.0
1932	I	100.0	439	105.8	317	96.4	108.4	130.0
	II	99.8	446	105.3	314	95.0	108.1	133.2
	III	99.8	444	104.6	315	94.6	108.0	132.2
	IV	98.4	430	102.4	311	93.8	106.9	131.5
	V	97.2	438	100.7	305	92.3	105.8	129.4
	VI	96.2	425	98.1	297	91.5	104.0	127.8

This all-round decline in commodity prices in 1931-32 followed a line the downward trend of which had been definitely traced in the course of the preceding two years. Yet behind this decline there loomed now a darker and more menacing background of far-reaching disorganisation, which no country and no branch of production, trade and finance could possibly escape after years of maladjustment and strain.

The outstanding event of the year 1931-32, which has had severe repercussions in all branches of economic activities, was the outbreak, in the summer of 1931, of a financial crisis (1). From what has been said in the preceding section of the abnormal conditions which had prevailed for years in public and private finance, one could see that the strain to which the State Budgets, the credit machinery and the currency were subject, was excessive and tended rapidly to increase along with the aggravation of the depression. The financial consequences of the fall in prices, combined with the burden of public and private debts and with the widespread abuse, in the practical absence of capital available for investment, of short-term credit facilities, made for insolvency. The currency systems, which, though re-organised only a few years before, rested on precarious foundations owing to the almost universal rupture between the exchange value of money and its purchasing power on the home market, to the extreme concentration of gold in a few countries and to the fact that the nominally international

(1) For a fuller account of the financial crisis the reader is referred to the *World Economic Survey*, 1931-32, published by the League of Nations.

gold standard was not allowed to function properly, depended for their stability mainly on the avoidance of any form of inflation, and, therefore, ultimately on the balancing of the Budgets. By 1931, the strain on the credit systems of countries which have had recourse to short-term borrowing for meeting all kinds of pressing liabilities, often of a nature which made such financing risky in the extreme, began to tell. With the extension and aggravation of the depression in the lending countries, the renewal of credits was becoming increasingly difficult and deposits were being withdrawn. State Budgets in several countries, especially in Central and Eastern Europe, where the effects of the agricultural crisis were exceedingly acute, were completely upset, and deficits grew apace. Thus, when, in May 1931, the Austrian *Creditanstalt* became insolvent and had to be rescued by the intervention of the Government and of the National Bank, with the financial support of the Bank of England and of the Bank of International Settlements, this ostensibly local event had a wide international repercussion. Indeed, it exhibited clearly the precarious nature of the financial situation in Central and Eastern Europe, and as large sums have been placed or lent on short term in these countries, and more particularly in Germany and Austria, by the leading financial institutions in Europe and in the United States, the difficulties of the *Creditanstalt* were interpreted as a warning. The withdrawal of credits and of deposits from the banks of Central Europe became general. It affected, in the first instance, Germany, whose short-term liabilities during the preceding few years had grown enormously, and in the second half of June Germany was involved in serious difficulties owing to wholesale withdrawals. The situation culminated in July in the break-up of the Danat Bank, and emergency measures had to be taken to prevent the spread of financial panic.

As the financial disorganisation in Europe extended, the necessity of relieving the tension, at least for a time, became evident, and on 23 June President Hoover came forward with his proposal of a year's moratorium in the payment of reparations and war debts. Temporarily, this eased the situation, but it could not stay the spread of the financial crisis, as disorganisation had already gone too far, and the effects of the outbreak had to run their course. Indeed, in the focus of the disturbance financial disorganisation continued unabated, along with the aggravation of the economic and agricultural crisis in Eastern Europe. In the course of the agricultural year 1931-32, Austria, Hungary, Greece, Bulgaria and Rumania all appealed to the League of Nations with requests for financial assistance. The deficits of the Budgets of the countries of Central and Eastern Europe, in 1931-32, were as follows: (1)

	Deficit in millions of Swiss francs	In per cent. of expenditure
Austria (1931) . . . . .	234	13.5
Bulgaria (1931-32) . . . . .	34	14.8
Greece (1931-32) . . . . .	16	2.3
Hungary (1931-32) . . . . .	114	9.2
Poland (1931-32) . . . . .	118	8.2
Rumania (1931) . . . . .	197	17.1

(1) Table based on the figures published in the Report of the Stresa Conference (League of Nations, No. C. 666. M. 321. 1932, VII. C. E. U. E. 77).

In August 1931, with a view to staying the extension of the financial disorganisation in Central Europe, the foreign creditors of German banks and private borrowers agreed to a "standstill" arrangement, by which their credits were prolonged for another six months; an arrangement which was subsequently renewed, subject to partial repayment of the advances, when the original term came to an end in February 1932. Similar arrangements were made in the case of certain other countries as well, with the result that international credit operations in Europe had largely ceased, and the advances already made became in a large part frozen.

These "standstill" agreements were followed by the declaration by a number of States of moratoria with regard to the service of their foreign public debts. This was done, in the course of the year 1931-32, by Brazil, Bolivia, Hungary, Uruguay, Chile, Salvador, Greece, Latvia and Yugoslavia. The payment of foreign commercial debts was suspended, in the course of the same period, by Uruguay, Germany, Chile, Salvador and Yugoslavia. Thus, the whole system of international credit was affected.

Meanwhile, the repercussions of the financial collapse of Central Europe spread to other countries, and in the first instance to Great Britain. The London banks, while they have had their important advances in Germany and Austria frozen under standstill agreements, had very large short-term and sight liabilities to customers all over the world. Not only, thus, had London been affected directly by the losses suffered on the Continent, but, in its position as the world's banker, it had to cope with the rush upon the deposits it held on behalf of those who now had to call in their reserves. For a considerable time, beginning from the German financial panic in July, the London money market had to meet the withdrawal of deposits in increasing amounts, and on 21 September the convertibility of the Bank of England notes had to be suspended, Great Britain having thus abandoned the gold standard. This step on its part was followed by similar measures in a number of countries. Within the British Empire, Canada had already restricted the convertibility of notes in 1929, and in October 1931, it abandoned the gold standard completely; Australia and New Zealand had allowed their currencies to depreciate in 1930, and now went off gold technically. South Africa alone, being a producer and exporter of gold, kept to the gold standard till late in 1932, though in November 1931 it was forced to introduce measures of control over dealings in exchanges. In Europe, the three Scandinavian countries followed Great Britain in abandoning the gold standard, and so did Finland and Greece. Overseas, Japan and a number of Latin-American countries did the same.

The abandonment of the gold standard by Great Britain, in the midst of growing monetary and financial disorganisation throughout the world, was followed by the adoption in many countries of restrictions bearing on dealings in exchange or aimed at the maintenance of equilibrium in their balance of payments and at the prevention of capital export. Apart from the standstill agreements, the moratoria and the intensification of measures intended at a reduction of imports, which achieved an unprecedented development in 1931-32 under the pressure of the financial crisis, the measures aimed at the control of transactions in

foreign exchange, adopted by Denmark, Greece, Hungary, Austria, Bulgaria, Czechoslovakia, Estonia, Finland, Latvia, Lithuania, Yugoslavia, Italy, Norway, Rumania, Spain and Poland in Europe, as well as Persia, Turkey, the Argentine, Brazil, South Africa, Chile, Nicaragua, Uruguay and Ecuador in other parts of the world, put a new series of obstacles to international commerce and to the movement of capital from one country to another. To the difficulty of placing goods on a foreign market, surrounded by often prohibitive customs duties and other restrictions to imports, there were now added the complication and delay of obtaining payment for them, under a regime in which, as a rule, the necessary amount in foreign exchange could only be obtained for the payment of goods recognised as more or less indispensable. The control of transactions in foreign exchange often became an indirect but effective expedient for reducing importations with a view to keeping the balance of payments as far as possible favourable.

Direct restrictions have also developed enormously since the outbreak of the financial crisis, and certain forms of such restrictions, hitherto but little practised, received a great extension. Indeed, it was characteristic of the evolution of such measures in 1931-32, that, though increases in customs duties were numerous and widespread, on the whole they seemed to have somewhat receded to the background, as compared with the preceding years, and measures aimed at the direct quantitative limitation of importation would appear often to have been preferred. Indeed, it is sometimes claimed that by such measures alone a real control over trade and production can be achieved.

The systems of control of import trade most widely adopted in 1931-32 were contingents or import quotas and the licensing of imports, while in some cases monopolies and even prohibitions were introduced.

The system of contingents or import quotas, consists essentially in the fixation of the quantities of specified products to be imported for a certain period ahead. The details of the actual application of this system may vary considerably, and in some cases it takes the form of a permission to import a determined quantity of products subject to the payment of the general rate of duty or even of a reduced rate, while anything imported in excess of this contingent is liable to a surcharge. The system of contingents, in the course of the year, was widely practised, especially in France, where it is considered as probably the most effective expedient in the control of imports, and is largely applied to the importation of agricultural products. In two countries, namely Latvia and Turkey, the system of contingents applies to all imports. As a method based on the deliberate planning of at least certain branches of economic activities and on the consideration of the needs of the home market for a certain period ahead, at a time such as the present, when a struggle is going on between the principles of economic freedom and of organised economy, this development, therefore, is interesting.

The licensing of imports, which, in the course of the period under review, has had an extension even wider than that of the system of contingents, differs from the latter in that, while also intended at the deliberate control of the quantities imported and of their distribution over the different seasons, it does not involve planning for a fixed period ahead, but leaves to the organ of control to adapt the importations to the needs of the moment.

An interesting development in the actual organisation of international trade, due to the financial crisis and to the severe restrictions imposed upon dealings in foreign exchange, was the extension of agreements by which trade between the countries concerned could be carried on without involving, at every transaction, the payment of sums in foreign currencies. Arrangements of this kind take either the form of direct barter, each country transferring to the other agreed quantities of certain products required by the latter, or of so-called clearing agreements, by which payments to exporters are made in their respective national currencies by the banks of their own countries, and only the balance outstanding in favour of one of the two countries, when the accounts are closed, is actually transferred.

One can see, from the brief outline given above, what a complicated network of regulations and restrictions, either directly imposed on the trade in commodities, or indirectly affecting it through the medium of the control of dealings in foreign exchanges, was imposed upon international commerce in the course of the year 1931-32, on top of the barriers which were already in existence before. This, however, was not the only development of decisive importance for the evolution of world economy in the course of this period. Another event of outstanding importance was the change in the commercial policy of Great Britain, which followed closely upon its abandonment of the gold standard and led to the closing of what, hitherto, had been the only free market in the world.

For years, and more particularly since the beginning of the present world crisis, Great Britain had been the market on which converged the surpluses of production of other countries which, by the protectionist policy of the rest of the world, were excluded from other markets. The position of the national producer, in both agriculture and the manufacturing industries, in the face of his export markets closed against him, and of his own home market flooded with cheap foreign goods imported free, was becoming untenable, and a strong protectionist current of public opinion, which had been growing for some time since the war, was beginning to make itself increasingly felt. With the disorganisation of world trade, which resulted in a heavy fall in the returns of shipping, of foreign investment and of the other items of invisible exports, as well as in the diminution of the exports of commodities, public opinion tended increasingly to become conscious of the country as being in the first instance a producer, rather than a trader and a banker, and of the British market, supported by the development of Empire trade, as the natural preserve and the last stronghold of the national producer, which must be defended. The financial position, moreover, made the restriction in imports imperative. When, in the midst of the financial crisis, the real seriousness of the situation was fully realised, public opinion, faced with a fresh wave of trade restrictions abroad which followed on the depreciation of sterling and the consequent revival of British exports, rallied to the programme of the National Government which comprised tariff reform. The *Abnormal Importations (Customs Duties) Act* of 20 November 1931, which imposed duties of 50 per cent. *ad valorem* on a large number of articles, for a term of six months, with a view to reducing imports and improving the balance of trade, marked the abandonment by Great Britain of the traditional free trade policy. The *Horticultural*

*Products (Emergency Customs Duties) Act* of 11 December 1931, extended the protection to early fruit, vegetables and flowers. The *Import Duties Act* of 29 February 1932, which imposed an initial 10 per cent. *ad valorem* duty on all imported commodities, barring special exemptions and the commodities subject to special treatment under the two preceding Acts, as well as those already subject to revenue or other duties under earlier legislation, completed the conversion of Great Britain to protectionism. In accordance with the principle of avoiding the imposition of duties on foodstuffs and raw materials, practically all the more important agricultural products, however, were included in the list of exempted commodities, the tariff bearing with all its weight mostly on manufactured and semi-manufactured goods. Only in special cases duties were subsequently imposed on certain staple agricultural products, such as potatoes.

With the abandonment of free trade by Great Britain, an important advance was made in the transformation of the organic whole of world economy into a vast agglomeration of more or less closed national economies. The problem of adaptation to the drastic change in the economic structure of the world, begun since the war and now completed, has entered in a new phase.

In the course of this adaptation, international trade, the former currents of which have been cut across and impeded by all kinds of restrictions, would appear to be in the course of reorganisation. With the extension of bilateral agreements concerning trade generally, as well as of special barter or clearing arrangements, and with the spread of the system of contingents and licenses involving the definite allocation of certain import quotas to particular countries, attempts are being made to substitute a more constructive scheme for the purely negative expedient of raising customs duties against all imports. Yet one could hardly ignore the great political dangers of the discriminations involved in the development of this system; while the possibilities it affords for economic expansion, as compared with those provided by a free world market, are unavoidably limited.

Turning now to consider the conditions of international trade in agricultural products during the period under review, we can see that what has been said above of the development of restrictions other than customs duties, fully applies to agriculture. Indeed, by the summer of 1931, when the financial crisis gave a fresh impetus to the growth of trade barriers, the duties imposed on most agricultural products in the principal importing countries had already reached a level beyond which any further increase would have been practically useless, without, however, affording absolute protection against the penetration of foreign produce through loopholes which had to be provided for imports needed for special purposes. While, in July 1931, when prices of wheat in London and Liverpool, where the quotations give the nearest approach to what is conventionally referred to as the world market prices, averaged from 11.82 to 12.40 gold francs per quintal, the general rate of duty on wheat imported to Germany reached 30.93 gold francs per quintal, while in France it worked out at 16.36 and in Italy at 16.50 gold francs. In Spain, the duty was 17.00 gold francs, and that came into operation only when the prices of wheat in Castile reached a certain level, below which all importation of wheat was prohibited. These exorbitant

general duties were subject to modifications and reductions in certain specified cases, for wheat imported for special purposes; and these exemptions often provided loopholes for imports which, had the general tariff alone been in operation, would have been excluded completely. In the case of agricultural products, as in that of other commodities, it was felt that, in trying to restrict importations by mere pressure upon prices, effected through the usual machinery of tariffs, one was leaving too much to chance and was failing to exercise a sufficiently complete control over the conditions of supply and demand on the home market. Accordingly, apart from the conclusion of bilateral agreements between particular countries, aimed at organising their mutual trade relations, there grew up, in the course of 1931-32, a whole system of regulations and arrangements the purpose of which it was to assure a complete control by the countries concerned over the quantities of foreign products admitted to their markets, as well as, in some cases, over the actual distribution of imports according to seasons.

Thus, to agricultural products were largely applied all the different measures referred to in the earlier part of this chapter, and especially the contingents or import quotas and the licensing of importations. Less frequent were monopolies and prohibitions, while agricultural products have played a prominent part in the list of commodities affected by some of the barter and clearing agreements. Though increases in import duties were numerous in 1931-32, they were mostly limited to markets of minor importance and have been somewhat relegated to the background of commercial policy.

As to the change in the tariff policy of Great Britain, it mostly affected, throughout the whole of 1931-32, the importation of manufactured and semi-manufactured goods, while the bulk of agricultural products was still admitted free of duties.

At the close of the agricultural year 1931-32, the position in the various countries was as follows. In Germany, apart from the existing tariffs, which imposed heavy duties on imports of agricultural products, the admission of butter and hops was subject to contingents, any quantities of these products imported in excess being liable to surcharge upon the general tariffs. In Austria, imports of sugar, butcher's stock, meat, dairy produce, fats, wine and foreign fruit were subject to licenses, while contingents were in force for wheat and meat from Yugoslavia, veal from Hungary and pork and veal from Poland. In Belgium, the system of contingents was introduced for cattle, meat and butter, and the importation of cereals, flour, meal, and wines was only allowed under license. Denmark applied the system of licenses to wines, spirits, and sugar, the exportation of the latter article being also subject to license. In Spain, contingents were in force for chilled meat, coffee, eggs, tobacco and fish, while exports of foodstuffs were subject to licensing. In Estonia, the State monopolised the importation of cereals, potatoes and pulse, of flour, honey, milk and dairy produce, eggs, coffee, cocoa, tea, vinegar, malt, hops, hides and skins, cotton and wool, while certain other products were subject to licensing. France introduced contingents for imports of cattle, meat, dairy produce, fish, poultry,



eggs, sugar, bananas, flowers and bulbs, timber and hides and skins. Special customs arrangements have been provided for the importation of fixed contingents of Rumanian wheat and maize and of Yugoslav and Hungarian wheat. The system of licenses applies to imports of wheat and wheat and rye flour. In Greece, contingents have been fixed for the importation of cheese, fruit, vegetables, fish and crustacea, sugar, wines and alcohols, cocoa, biscuits and bread, coffee, vegetable fats and eggs. Hungary applied the system of licenses to the importation of maize, cheese, apples, bananas, silk, hemp and other vegetable fibres, and in certain specified cases of malt. In Italy, contingents have been introduced for importations from countries having no special treaty arrangements of grapes, wines, barley, fish and malt. In Latvia, all imports were subject to contingents, the importation of cereals was subject to a Government monopoly and that of oranges was prohibited. In Holland, the system of contingents was applied to meat, veal, and butter. In Norway, the importation of wheat, rye, oats, barley and flour was a Government monopoly. In Poland, imports of cereals and flour, vegetables, fruit, hops, alcohol, fish, butcher's offals, and vegetable oils were subject to licenses, while special customs arrangements were provided for fixed contingents of apples, bananas, lemons, coffee, tea and cocoa imported by sea. In Portugal, the importation of wheat, wheat flour and bread is prohibited. In Rumania, contingents were in force for the importation of sugar. In Sweden, the importation of wheat, rye, wheat flour, rye flour and sugar was a Government monopoly. In Switzerland, imports of wheat and butter were subject to control, while those of flour were a monopoly. Contingents applied to eggs and certain other products. In Czechoslovakia, contingents applied to cereals, flour and butter, while certain other products of lesser importance were subject to licenses. In Turkey, all imports, including those of agricultural products, were subject to a system of contingents. In Yugoslavia, measures of control were applied to the exports of cattle, poultry, milk, eggs, and animal products. If to this we add the Government monopoly of all foreign trade, which exists in the U. S. S. R., we can see to what extent, in the course of the period under review, the international trade in agricultural products was subject to various methods of control, and how little scope there was left for the unfettered functioning of the world market under conditions of free play of supply and demand.

Indeed, especially since the conversion of Great Britain to protectionism, though, in the course of 1931-32, this had not yet affected her import trade in agricultural products, the expressions "world market" and "world economy" have largely ceased to be anything but conventional terms, to which there is no corresponding reality.

The extent to which the former unity of the world market was destroyed in the course of the last few years by the development of economic particularism, is clearly shown by the inordinate increase in the difference between the prices of the principal cereals in the chief exporting countries and on the representative protected markets in Europe. Indeed, if we compare the average prices of wheat, rye, oats and maize, as quoted in the exporting countries, on the free

market of London and Liverpool and in the principal protected markets of Europe, in January, 1927, and in January, 1932, we obtain striking results: (1)

	1927 Gold fr. per qu.	Per cent. variation between exporting and protected markets :	1932 Gold fr. per qu.	Per cent. variation between exporting and protected markets :
<i>Wheat :</i>				
Exporting countries . . . . .	26.96	—	10.27	—
London and Liverpool , . . . .	31.09	-	11.14	—
Protected continental markets . . . . .	36.05	33.0 %	30.21	194.1 %
<i>Rye :</i>				
Exporting countries , . . . .	22.39	—	11.98	—
Protected continental markets . . . . .	28.20	25.5 %	17.10	42.8 %
<i>Oats :</i>				
Exporting countries , . . . .	16.75	—	7.91	—
London and Liverpool , . . . .	18.46	—	8.70	—
Protected continental markets . . . . .	22.13	32.1 %	18.92	139.2 %
<i>Maize :</i>				
Exporting countries , . . . .	13.19	—	6.12	—
London and Liverpool , . . . .	17.28	-	6.89	—
Milan , . . . . .	20.52	52.5 %	16.69	172.7 %

This table gives a fair idea of the conditions in which the economic life of the world has to go on and to surmount the difficulties inherent in the post-war situation. Broken up by trade barriers into a large number of more or less effectively closed national economies, the system of world economy is largely put out of action. The agricultural industry in the exporting countries, the output of which is so little subject to deliberate control, and which, therefore, is so vitally interested in a world-wide market, capable of mitigating the effects of local over-production, naturally feels these changes in the structure of world economy very deeply and painfully. As we shall see in the following section of this chapter, the year 1931-32 was a period during which the agricultural industry of the world had been struggling with a continuous contraction of its markets, which affected more particularly its finer products and was mostly due to the aggravation of the economic situation generally and to the diminution in the purchasing capacity of the consumers.

### III. -- AGRICULTURAL CONDITIONS IN 1931-32.

The problems which confronted the agricultural industry all over the world in 1931-32 were essentially the same as those with which it had already been struggling during the preceding two years, but the aggravation of the economic

(1) The quotations are taken for the following markets and qualities: A. *Wheat*: (a) Winnipeg, Manitoba, No. 1; Chicago, H. W. No. 2; Buenos Aires, Barletta; Budapest, Tisza; (b) London and Liverpool, Manitoba, No. 1; Hard Winter, No. 2; Australian; (c) Home-grown, Berlin, Paris and Milan, B. *Rye*: (a) Minneapolis, Budapest, Warsaw; (b) South-Russian; (c) Hamburg, Amer. No. 2; Berlin, Home-grown; C. *Oats*: (a) Winnipeg, White No. 2; Chicago, White No. 2; Buenos Aires, La Plata; (b) La Plata; (c) Berlin and Paris, Home-grown; D. *Maize*: (a) Chicago, Amer. mix. No. 2; Buenos Aires, La Plata yellow; Braila, Danubian; (b) La Plata yellow; (c) Home-grown.

situation generally and the outbreak of the severe financial crisis in 1931 greatly added to its difficulties. The situation resolved itself into a continued decline in the prices of agricultural products, but the incidence of the depression had somewhat changed. Indeed, though wheat, by reason of its fundamental importance in the general scheme of world agriculture, still remained in the focus of the economic disturbance, it was not in wheat or in any of the other cereals that the fall in prices was particularly pronounced, but rather in the products of animal husbandry and of other branches of farming and horticulture catering mainly for the more refined consumption of the urban and industrial classes. The fall was also very severely felt in the branches of agriculture engaged in the production of raw materials for the manufacturing industries, such as cotton, flax, hemp, rubber, etc. In both cases, the aggravation of the industrial depression was responsible for a further serious diminution in the demand for these products, which, being highly elastic, tends to follow closely the changes in industrial conditions. The decline in prices, in the case at least of animal and horticultural products, had moreover been aggravated by the pressure of increasing supply, due to the farmers, in their flight from the heavily depressed arable farming, having largely turned to these relatively sheltered branches of agriculture.

Considering the conditions of supply and demand of the various groups of agricultural products, by which the price movements during the year 1931-32, were determined, we thus have to distinguish between two sets of factors affecting the formation of prices of agricultural products. On the one hand, there were the factors which can be referred to as specific or agricultural; on the other hand, the development of the general economic situation was responsible for bringing into play other factors, which tended to exercise an increasingly powerful influence upon the consumption of agricultural products and, therefore, upon the demand side of the price equation. The two sets of factors, besides, are by no means independent of each other in their action upon the market situation and prices, since any pressure upon prices exercised by either of these two sets of factors, and affecting immediately only certain classes of agricultural products, unavoidably makes its influence felt all over the market. Thus, a decline in the prices of the products of animal husbandry, due to the industrial depression and to the fall in the purchasing capacity of urban population, prevents the farmers from going over from the cultivation of cereals to the raising of cattle, to dairy farming, and so on, and thus ultimately aggravates the depression of cereal prices. It may be said that, ever since the beginning, in 1929, of the acute agricultural depression, the situation, both agricultural and industrial, developed in a way which made such an aggravation of the depression unavoidable; and from the latter part of 1931 the main pressure upon agricultural prices came from the industrial side, in the form of a continuous diminution of the consumption of those products of agriculture for which the demand, unlike that for cereals, is highly elastic.

Below, we will consider first the development of the situation in its specifically agricultural aspect, and later examine the effects upon it of the growing industrial depression.

Starting from wheat, which, as we have pointed out, continued to remain in the focus of the depression, we see, that, in 1931-32, the total area and production of wheat in the world had diminished slightly, as compared with the preceding year but they were still considerably superior to the average of the years 1926 to 1929.

	Wheat area in millions of hectares	Wheat production in millions of quintals
Average 1923 to 1929 . . . . .	96.4	973.6
1930-31 . . . . .	105.0	1,049.5
1931-32 . . . . .	102.8	1,042.0

The diminution in the area was far from universal, and the reduction in the world total (exclusive of the area and production of the U. S. S. R.) was accounted for mainly by reductions effected in the United States, Argentina and Australia, all the other principal wheat-growing countries having actually increased their wheat cultivation, as may be seen from the table below :

*Area sown to wheat, in millions of hectares.*

	1923-29	1930-31	1931-32
Europe (exclusive of U. S. S. R.) . . . . .	28.1	29.8	30.7
Canada . . . . .	9.2	10.1	10.6
United States . . . . .	23.2	24.7	22.4
India . . . . .	12.7	12.8	13.0
Argentina . . . . .	7.4	7.9	6.5
Australia . . . . .	4.9	7.4	6.0

In the U. S. S. R., the area sown to wheat in 1923-29 averaged 26.2 millions of hectares ; in 1930 it was 33.9 millions of hectares, and in 1931 37.4 millions of hectares. Australia, which, until 1930, had deliberately followed the policy of countering the fall in prices by an extension of cultivation at lower costs [per unit, now had reduced the area for the first time. Europe, however, had again increased her cultivation of wheat. The peasant agriculture of Europe, entrenched behind high tariff walls and restrictions, was fighting for its existence against overseas competition which might otherwise have brought about its destruction, as an element of fundamental importance in the political and economic system of the Continent. Thus, a considerable increase in the wheat area, amounting to nearly 18 per cent., but compensated by a diminution in that of rye, took place in Germany in 1931. Compared with the average of 1923-29, the area increased 26.5 per cent., the net increase in wheat being about 18 per cent. Poland increased its wheat area by about 9 per cent., and Rumania by about 12 per cent. Italy, though it increased its wheat area but slightly, had considerably augmented its production, which had increased about 15 per cent. in 1931, as compared with 1930, and about 9 per cent., as compared with the average for 1923-29. Other countries, with the exception of France, which showed a diminution of about 5 per cent. in the area sown to wheat, registered no important changes either way. On the balance, however, as we have shown, there was a marked increase in the acreage.

As to production, owing to the great inequality in the yield of crops in various parts of the world, increases in the area sown to wheat were not always accompanied by increases in production. In Europe, the crops were generally good, and production increased; the same applied to the United States, where, in spite of a diminution in area, the production was greater than in 1930. But in Canada the crop was extremely poor, and production suffered a severe diminution; in India also the increase in area was accompanied by a considerable fall in the output. In the principal wheatgrowing countries the position in this respect was as follows:

*Production of wheat, in millions of quintals.*

	1923-29	1930-31	1931-32
Europe (except U. S. S. R.) . . . . .	353.0	370.7	390.2
Canada . . . . .	112.3	114.5	87.7
United States . . . . .	224.6	233.4	245.0
India . . . . .	90.8	106.4	94.5
Argentina . . . . .	64.3	63.2	59.8
Australia . . . . .	37.7	58.1	51.6

In the U. S. S. R., the production of wheat in 1923-29 averaged 193.3 millions of quintals, and in 1930, a year of very good crops, it rose to 269.2 millions of quintals. In 1931 the crops were bad, and the production was greatly reduced. Official statistics of the results of crops in 1931 have not been published.

European imports of wheat, always dependent on the production in Europe, fluctuate considerably from year to year, and the effect upon them of the restrictions imposed upon international trade cannot easily be isolated. In the course of the last few years, European net imports of wheat were as follows: in 1929-30, after a particularly bountiful harvest, they amounted to 123.3 millions of quintals; in 1930-31, after an average crop, they reached 152.0 millions of quintals; in 1931-32, with an increased area and a yield slightly above the average, the net imports were 139.5 millions of quintals.

Of these imports, in 1931-32, about 73 per cent. were accounted for by the four leading European wheat importing countries, the United Kingdom, France, Italy and Germany. The imports of these four countries in the course of the five last agricultural years are shown in the table below:

	1927-28	1928-29	1929-30	1930-31	1931-32
United Kingdom . . . . .	57.9	54.5	55.8	61.1	65.1
France . . . . .	12.8	14.5	3.0	16.0	21.5
Italy . . . . .	23.9	23.9	11.5	22.1	9.1
Germany . . . . .	24.1	21.2	13.0	8.5	6.3

Deliberate measures aimed at diminishing imports and protecting national production resulted in a heavy and sustained diminution of wheat imports in Germany and a great, though less steady, reduction in Italy. In France, production was below the average both in 1930 and in 1931, and imports had, therefore, increased. The increase in imports into the United Kingdom proceeded

apace with the diminution in the acreage and production at home, and, the British market still being open to the free importation of cereals, surpluses of wheat from all over the world tended to flow in its direction. In 1931-32, the United Kingdom still continued to play the part of shock-absorber on the wheat market, and with France, Japan and some other countries which have increased their imports, it helped the absorption of the wheat crop, though without allowing the stocks of wheat in the principal exporting countries to diminish to any considerable extent. Indeed, the commercial stocks of wheat in the United States and Canada, which, from 64.4 millions of quintals in July 1930, rose to 90.7 millions of quintals in July 1931, amounted to 87.8 millions of quintals in July 1932.

With regard to the movement of wheat prices, however, an interesting phenomenon of relative stabilization could be observed in 1931-32, the headlong decline to which they had been subject for two years having temporarily ceased. Indeed, the average prices of wheat, in gold francs per quintal, on some of the principal markets, were as follow :

	1928	1929	1930	1931	1931 July to December	1932 January to June
London and Liverpool, Manitoba No, 1	27.61	28.06	20.68	12.50	11.68	10.67
Winnipeg, Manitoba No, 1 . . . . .	25.79	25.55	18.01	10.70	10.10	10.26
Chicago, Hard Wheat No, 2	25.01	23.41	18.21	12.73	10.28	10.67
Buenos Aires, Barletta . . . . .	24.35	22.01	18.32	9.33	8.82	9.04

This stabilization of wheat prices, which later development had proved to be only temporary, may have been due to some extent to the combination of slightly diminished world production with a certain increase in demand. Indeed, the standard of life of the mass of population in most countries, which had risen considerably in the course of the period preceding the present depression, must have been lowered by the crisis and unemployment of the last three years, and the process of change in the diet of the working classes, which involved a diminution in the consumption of bread, must have been largely reversed. Direct statistical proof of this return to bread is not available, but the combination of increased wheat imports with a considerable fall in the prices of dairy products, meat, bacon, vegetables, fruit and other constituents of a more refined diet in a country so heavily affected by the industrial depression as Great Britain, would appear to suggest this interpretation.

With regard to other cereals, the changes in the area under crops, in 1931-32, as compared with the preceding years, exclusive of the U. S. S. R., were as follows :

	1923-29	1930-31	1931-32
	(Millions of hectares).		
Rye . . . . .	19.1	19.9	18.9
Barley . . . . .	27.5	30.4	29.1
Oats . . . . .	42.2	41.9	41.3
Maize . . . . .	75.4	79.3	81.6

Thus, except for maize, there was a slight diminution in the area sown with these cereals, as compared with the preceding year, but the reduction

was insignificant, and in the case at least of barley the cultivation was still in excess of the average for 1923-29.

The development of production of these four cereals is shown in the table below :

	1923-29	1930-31	1931-32
	(Millions of quintals).		
Rye . . . . .	231.7	256.3	213.5
Barley . . . . .	313.2	358.1	311.2
Oats . . . . .	523.6	520.4	481.3
Maize . . . . .	1,102.3	944.0	1,103.0

The output of maize had increased, as compared with the preceding year, while in the other crops there was a diminution compared with both 1930-31 and with the average production for 1923-29.

The price movements of the four cereals were interesting in so far as they pointed to a certain stabilization in 1931-32.

	1928	1929	1930	1931	1931 July to Dec.	1932 January to June
	(Gold francs per quintal).					
<i>Rye :</i>						
Minneapolis No 2 . . . . .	22.05	20.01	12.41	8.06	8.66	8.72
<i>Barley :</i>						
Winnipeg, Western No 4 . . . . .	18.25	16.17	6.54	6.55	7.24	7.69
Liverpool and London, Canadian No 3 . . . . .	24.48	22.07	14.24	10.09	11.25	11.44
<i>Oats :</i>						
Chicago, White No, 2 . . . . .	20.89	21.31	14.85	9.37	9.31	9.44
Liverpool and London, La Plata . . . . .	23.56	19.09	10.87	9.41	10.08	9.44
<i>Maize :</i>						
Chicago, American mixture No 2 . . . . .	10.94	10.38	16.90	10.79	9.29	7.00
Liverpool and London, La Plata yellow . . . . .	22.51	21.10	13.36	8.40	7.45	7.83

In the case of cereals, we are dealing with products for which the demand is exceedingly inelastic, and of which the supply is only partly subject to deliberate control. Changes in the demand for bread-making cereals, though they take place and exercise a profound influence upon the market, develop slowly and are to a certain extent cancelled out by contrary movements. Thus, while there had been, for a considerable time past, up to the present depression, a steady diminution in the *per capita* consumption of wheat in most industrially advanced countries, this diminution was partly set off by the increase in wheat consumption in other countries, in which increased prosperity meant the substitution of wheat for rye. With regard to the demand for feed-grains, the diminution due to the replacement of horses or other draught animals by mechanical means of locomotion, may be more or less made good by the development of stock-farming, and its repercussions upon the market may be mitigated. But, as a rule, the production of cereals is much more easily increased than diminished, especially when, as now, it largely depends upon countries in which there exists no alternative to their cultivation, and when in other countries it is mostly in the hands of numerous peasant farmers whose traditional

husbandry cannot easily be transformed at any time, and particularly during a general economic depression. A crisis of cereal farming, therefore, when it develops concurrently with an economic depression, is a stubborn and prolonged disease, with alternating periods of improvement and relapses, and it lends itself to treatment only slowly and gradually. In the complex structure of the agricultural depression, the cereal crisis, however, holds a place by itself. Indeed, it is the independent element of the depression, the one of which the origin is not due to any other of its many elements. Originally due to economic and technical developments which were part of a general movement towards economic expansion, it developed out of a process of growth which, by lack of co-ordination and by the accident of the world war, generated a crisis. The wheat crisis may truly be said to play a pivotal part in the agricultural depression, both because of its characteristic independence of origin, and because of the importance of wheat in world agriculture. In all the other agricultural products, of which the common characteristic is the relative elasticity of demand and the far greater adaptability of supply than in cereals, the depression is a secondary development, deriving either from the wheat and cereal crisis, or from the industrial depression, or from both. This, however, does not prevent the depression in these branches from having repercussions upon the primary factors from which it is derived.

Among agricultural products, there does not exist one that has escaped this secondary depression. Some of them, such as animal products, vegetables, fruit and generally articles of food were in growing demand for years, and when the depression in cereal prices made arable farming unremunerative, farmers began to pay increasing attention to these branches, with the result that their production increased apace with the aggravation of the crisis, while their consumption was already beginning to feel the effects of industrial depression. Here, the effect of the cereal crisis upon the field of secondary depression is evident; but throughout this wide field, which covers all branches of agricultural production either for direct consumption or for industrial use, the general economic depression, and especially the industrial crisis, makes its influence felt more strongly than any other factor.

Throughout the year 1931-32, the industrial depression had continued unabated, and the purchasing capacity of the urban and industrial population, as well as the demand of industry for raw materials of agricultural origin suffered a heavy reduction.

According to an estimate made by the *Institut für Konjunkturforschung* in Berlin, the world's industrial production had developed as follows since 1928 (1):

1928	100
1929	107.8
1930	93.9
1931	82.7
Beginning of 1931	83.4
Beginning of 1932	75.2

(1) *Wochenbericht des Instituts für Konjunkturforschung*, No. 6, 11 May, 1932.



The output, compared with 1928, would thus appear to have diminished by 24.8 per cent.

The indices of production of the principal branches of industry in Germany, France, the United States and the United Kingdom are shown in the table below (1) :

	Germany	U. S. A.	France	U. K.
1928 . . . . .	100	100	100	100
1929 . . . . .	101.8	107.2	100.4	106.0
1930 . . . . .	81.3	87.4	110.2	97.9
1931, 1st quarter . . . . .	70.0	76.6	104.4	90.0
2nd quarter . . . . .	74.8	78.4	101.3	87.1
3rd quarter . . . . .	68.4	71.5	95.3	84.6
4th quarter . . . . .	62.7	64.9	90.3	92.3
1932, 1st quarter . . . . .	55.0	62.5	77.5	90.1
2nd quarter . . . . .	57.7	54.7	74.0	89.2

The decline in production was general, with the one slight exception of the United Kingdom, where, during the fourth quarter of 1931, industrial activities have been stimulated by the depreciation of sterling. The acute crisis over, the gradual appreciation of the currency tended to reduce the premium on exchange which British exports had enjoyed since the suspension of the Bank Act, and in 1932 there has been a slight reaction.

The diminution of economic activities was reflected in the continuous decline in the freight traffic of railways, which is shown in the table below for a number of countries (2) :

*Freight Traffic on Railways.*

	1929	1930	1931	1932 (6 months)
	(Millions of ton-kilometres per month)			
Austria . . . . .	379	322	273	209
Belgium . . . . .	699	595	502	375
Canada . . . . .	4,831	4,040	3,447	2,790
Czechoslovakia . . . . .	911	767	684	628
Germany . . . . .	5,745	4,556	3,792	3,146
Hungary . . . . .	519	462	392	280
Italy . . . . .	1,017	1,024	893	811
Japan . . . . .	1,066	932	875	853
Poland . . . . .	2,160	1,768	1,771	1,144
Rumania . . . . .	383	357	350	325
United Kingdom . . . . .	2,570	2,429	2,226	1,933
United States . . . . .	59,897	51,357	41,383	31,136

The volume of international trade, on the whole, had decreased, and its value had suffered a very severe diminution, with results highly unfavourable to the balance of payments and to industry, in which the margin of profit had been not infrequently reduced to vanishing point. The table below shows the diminution in the value of exports of a number of countries, as compared with 1929.

(1) *Monthly Bulletin of Statistics*, League of Nations.

(2) *Ibid.*

*Index Numbers of the Values of Exports.*

	1929	1930	1931
Argentina . . . . .	100	64.0	67.2
Australia . . . . .	100	93.6	93.6
Austria . . . . .	100	84.5	59.6
Belgium . . . . .	100	82.7	72.8
Bulgaria . . . . .	100	96.8	92.8
Canada . . . . .	100	74.9	51.2
Czechoslovakia . . . . .	100	85.2	63.9
Denmark . . . . .	100	94.3	77.9
Germany . . . . .	100	89.7	72.7
France . . . . .	100	85.4	60.7
Hungary . . . . .	100	87.9	54.9
India . . . . .	100	78.3	51.2
Irish Free State . . . . .	100	94.8	76.9
Italy . . . . .	100	79.5	65.9
Japan . . . . .	100	68.0	53.2
Netherlands . . . . .	100	86.3	65.3
New Zealand . . . . .	100	80.0	62.2
Poland . . . . .	100	86.5	66.6
Rumania . . . . .	100	98.5	76.3
Sweden . . . . .	100	85.5	61.9
Switzerland . . . . .	100	83.9	64.1
Union of South Africa . . . . .	100	69.2	48.7
U S S R . . . . .	100	112.4	87.9
United Kingdom . . . . .	100	78.3	53.3
United States . . . . .	100	73.3	46.1
Yugoslavia . . . . .	100	85.6	60.6

The fall in profits made by industrial, trading and transport companies during the last three years was striking. An investigation of the returns of 700 companies made by the *Economist* in Great Britain, gave the following results (1) :

*Index Numbers of Net Profits of Companies.*

	1924	1925	1926	1927	1928	1929	1930	1931
Manufacturing and mining . . . .	100	—	—	109	101	109	91	73
Transport, distribution and services	100	105	100	110	115	120	109	86
Operating overseas . . . . .	100	110	107	103	101	95	67	—

The net profits of United States Corporations, which, in 1929, were 62.6 per cent. above those of 1924, in 1930 fell to 30.6 per cent. of the 1924 figure : a fall of 69.4 per cent. in one year (2).

(1) SIR JOSIAH STAMP, Industrial Profits in the past Twenty Years, *Journal of the Royal Statistical Society*, Vol. XCV, Part. IV, 1932.

(2) *Ibid.*

The situation was clearly reflected in the movements of prices of Stock Exchange Securities, of which Index Numbers are given below (1) :

*Index Numbers of Stock Exchange Securities.*

	Germany (1924-26 = 100)	U. S. A. (1926 = 100)	France (1913 = 100)	U. K. (1924 = 100)	Nether- lands (1921-25 = 100)
1928 . . . . .	142.4	154.3	415	142	114
1929 . . . . .	126.1	189.4	525	139	117
1930 . . . . .	101.0	140.6	144	112	83
1931 . . . . .	76.3	86.9	305	87	51
1932 (6 months) . . . . .	--	45.8	255	80	32

Unemployment and reductions effected in wages and salaries with a view to reducing the cost of production and services were bound to diminish considerably the purchasing capacity of the masses of urban and industrial population, with results detrimental to the branches of agricultural production dependent on their prosperity for the disposal of their products.

The growth of unemployment in those countries in which the industrial organisation and the system of registration permit its development to be measured with a fair degree of accuracy, can be seen from the table below. On the whole, it is estimated that, in Europe and the United States, the total number of unemployed reached, by the middle of 1932, at least 25 millions of workers, who, with their dependents, probably represent a total population of over 100 millions of men, women and children (2).

*Numbers of Unemployed.*

	Germany (Total according to Labour Exchanges)	United Kingdom (Totally unemployed)	Italy (Totally unemployed)
December 1929 . . . . .	2,850,840	1,071,849	408,748
December 1930 . . . . .	4,383,813	1,853,575	642,169
June 1931 . . . . .	3,953,946	2,037,480	573,593
December 1931 . . . . .	5,608,187	2,262,700	982,321
June 1932 . . . . .	5,175,778	2,357,903	905,007

In the United States, the index of employment in manufacturing industries in December 1929 was 91.9; in December 1930, 75.1; in June, 1931, 73.4; in December 1931, 65.3, and in June 1932, 57.5.

The effects of so heavy a diminution in industrial production and in the earnings of those engaged in industry and trade upon the market of raw materials of agricultural origin and of those products of farming for which the demand, being highly elastic, depends very closely upon changes in the purchasing capacity of the consumers are obvious. The capacity of the market naturally diminished,

(1) *Monthly Bulletin of Statistics*, League of Nations.

(2) *Ibid.*

which severely reacted upon prices ; and the fall in the prices of products of animal husbandry, gardening and other branches catering for the more refined urban consumer, which had become pronounced in 1931, was bound to recoil upon the cereal markets by discouraging the transition from arable to stock-farming and to intensive agriculture and gardening of suburban type, which had been going on ever since the war.

The effects of the crisis upon consumption are difficult to investigate statistically, owing to lack of data bearing upon retail trade. It is worth while, therefore, to mention here the results of an investigation made in Germany by the *Institut für Konjunkturforschung* quite recently, and referring to May 1932. Pointing to the fact that, until a few months ago, retail trade had resisted the effects of the crisis, but that, lately, both its turnover and its prices had begun to be affected, the authors of the study give the following figures which show the fall in the value, the prices and the quantities sold :

	Per cent. reduction January to May 1932	Per cent. reduction between May 1931 and May 1932
<i>Articles of food, drinks, tobacco, etc</i>		
Value of goods sold . . . . .	— 17.0	— 19.6
Prices . . . . .	— 12.6	— 13.2
Quantities sold . . . . .	— 4.9	— 7.3
<i>Articles of clothing :</i>		
Value of goods sold . . . . .	— 22.2	— 28.3
Prices . . . . .	— 16.3	— 16.2
Quantities sold . . . . .	— 7.1	— 14.4

This little table, containing the results of a careful study in one particular country, in spite of its apparently local character, is highly interesting in that it shows the relation between the prices and the quantities sold, the heavy fall in the former helping to check the diminution in effective demand. Yet, in the course of 12 months, from May 1931 to May 1932, the quantities sold in the foodstuffs group diminished by over 7 per cent.

The industrial depression, which has exercised so adverse an influence upon the demand for articles of first necessity, especially in the course of the last year or so, for some years past has been felt by those products of farming which serve as raw material for the manufacturing industries. In 1931-32, the market for both foodstuffs and raw materials of agricultural origin suffered a severe aggravation of the depression. In fact, while cereal prices have been practically stationary, the full weight of the depression was felt by the branches in which the demand tends to fluctuate with the ebb and flow of industrial prosperity.

In the table below are shown the prices of the principal raw materials of agricultural origin for the last few years.

	1928	1929	1930	1931	July to Dec. 1931	Jan. to June 1932
(Average prices in gold francs).						
Cotton, Amer. middling, per quintal, Liverpool . . . . .	252.98	238.23	173.03	112.40	93.64	86 28
Flax fibre, Riga Z, K., per quintal, London . . . . .	242 43	187.04	127.24	81.02	78.58	79 88
Hemp, Bologna T. C., per quintal, Milan . . . . .	156.02	137.27	113.63	69.58	67.46	68.43
Jute, first marks, per quintal, London . . . . .	91.43	81.26	52.75	38.87	38 91	31 71
Manila hemp, J. 2, per quintal, London . . . . .	83.36	91.75	65.07	43.07	39.80	33 70
Silk, Classica, per kg., Milan . . . . .	59.84	54.13	35.98	25.88	23 95	20.19
Rubber, plant. sheet, per quintal, New York . . . . .	254 81	233.27	136 60	69 90	58 18	39 02

It may be seen that the fall in prices in the case of raw materials from 1928 to 1932 was even considerably more pronounced than it was in cereals. Indeed, cotton fell 65.9 per cent ; flax fibre 67.1 per cent ; hemp 56.1 per cent. jute 65.3 per cent ; Manila hemp 59.6 per cent. ; silk 66.3 per cent. and rubber 84.7 per cent. between 1928 and 1932.

The fall in the prices of non-cereal foodstuffs, belonging to the group of agricultural products with elastic demand, was also extremely heavy.

The table below shows the price movements of the principal animal products on representative markets :

	1928	1929	1930	1931	Feb. 1931	Jan 1932
(Average prices in gold francs per quintal).						
Beef, Argentine, chilled, London	173 75	188.14	177.21	146 29	134.15	107.42
Beef, Australian, frozen, London	123 60	129 12	133 28	83 82	76 39	68 55
Beef, English, London . . . . .	208.19	202 21	207 07	178 52	160.25	142 79
Mutton, N. Z., frozen, London . . . . .	183.85	179.67	160 24	118.47	109 93	85 19
Lamb, N. Z., frozen, London . . . . .	244 39	225 67	221 71	158 57	159 66	126 07
Pork, Chicago . . . . .	108.88	117.25	105 25	70.40	60 22	43 85
Bacon, Danish, London . . . . .	274.07	318 63	277 64	178.46	156 51	132.19
Butter, Danish, London . . . . .	478.53	461.46	380.88	308 51	271 09	227 30

No less marked than in animal products was the fall in the prices of colonial produce, of which an idea is given by the following figures :

	1928	1929	1930	1931	July to Dec. 1931	Jan. to June 1932
(Average prices in gold francs).						
Sugar, Java white, per quintal, London . . . . .	32.96	29 55	22.12	18.55	17.39	14 97
Tea, ord. Pecoee, Ceylon, per kg., London . . . . .	3.23	2.83	2.27	1.54	1.22	1 45
Coffee, Rio No 1, per quintal, Rio de Janeiro . . . . .	168.24	155.60	78.10	44.09	39.32	42 51
Cocoa, Trinidad, per quintal, London . . . . .	180.68	155.76	148.41	103 84	93.00	83.78

Wine, olive oil, fruit and vegetables, have all been affected by the general depression, with the result that no branch of agricultural production remained immune.

Quite apart from the severe pressure the industrial depression exercises upon the demand for agricultural products and their prices, it tends increasingly to affect the agricultural situation in another way also. Indeed, with the progress of unemployment in towns and industrial centres, especially in those countries in which there either does not exist an organised machinery of unemployment relief, or where the financial position does not permit such relief to be given on a sufficiently large scale in the form of public work or subsidies, and where the Government and local administrations are compelled to meet the situation without incurring too great an expenditure, there are distinct signs of an exodus of urban population in search of means of subsistence on the land. When the problem of existence for millions of people in all the industrialised countries of the world is reduced to its simplest terms and actually resolves itself into the question of escaping starvation by employing one's enforced leisure in growing the food required for immediate consumption, such a return to the land and to farming is bound to take place. Its development, of which there has been considerable evidence in the course of the year 1931-32, is mostly a spontaneous process; but in some cases it is supported by the State and by municipal authorities, especially in the form of suburban land settlement of the unemployed on municipal land or on holdings specially acquired for the purpose. This latter form of land settlement became, from the autumn of 1931, one of the recognised expedients in the scheme of unemployment relief, which the German Government, in co-operation with municipal authorities, was forced to develop in the face of the relentless growth of the number of unemployed. In the United States, on the other hand, the return to the land, which had reached considerable proportions, was in the main a spontaneous movement. In other countries the same phenomenon, though perhaps less conspicuous and therefore not yet definitely recognised, must have also had a certain extension. This movement, at a time of industrial depression, is very natural in countries in which the bonds between town and country are still close, and a large part of the industrial population is recruited in the villages, where in their earlier life they had lived and worked on the land. In such countries, the ebb and flow of population between town and country is a natural process dependent on the fluctuations in industrial activity, and agriculture provides a sort of safety valve for the pressure of labour supply during the phases of the business cycle in which the demand for labour diminishes.

Under present conditions, this return to the land under the pressure of the industrial crisis and of consequent unemployment is a phenomenon which, though, perhaps, in its initial stages, this is not yet recognised, possesses a vast economic and social significance. Should the present depression continue and should this movement develop unchecked and uncontrolled, the world, and more particularly Europe, will be faced with a new population problem of enormous difficulty.

Though only too often considered, largely on the ground of the experience of past business cycles, as a temporary process of adjustment to changes in the

demand for labour, the present tendency to return to the land, whatever may be its actual extent, is a phenomenon of a different nature. In fact, just as the economic depression is often considered as a phase of the business cycle, while it is essentially structural in origin and nature, so this movement to the land, which may justly be called urban exodus, if judged by superficial analogy with similar phenomena observed in the development of past business cycles, may easily be mistaken for a passing stage of adjustment, while in reality it is the manifestation of a far-reaching structural process. The technical progress in all branches of production, on which the present development of rationalization is based, implies a reduction in the demand for labour which is not temporary and conditioned by a passing phase of the business cycle, but permanent. Cyclic changes, may, and certainly will, affect the labour market, but not to an extent which will permit the absorption of the mass of unemployed. The present volume of production can, indeed, be greatly increased without necessitating the re-absorption of more than part of the present mass of unemployed, and the permanent residue of unemployment will remain very large. Under such conditions, the return to the land must be looked upon in the light rather of a permanent ruralisation of a certain part of the industrial population of the more highly industrialised countries, than of a temporary expedient to tide over the depression. In the densely populated countries of old civilization, with peasant husbandry on small holdings predominant, this process of ruralisation begins already in some cases to press heavily upon the land. Combined with the closing of the former facilities of emigration to the New World, the return to the land of workers thrown out of work by the industrial crisis tends in certain districts to cause rural over-population and misery. People who used formerly to be producers and to make their demand for goods felt on the market are thus reduced to conditions of extreme poverty. As producers and as consumers they are eliminated from the system of world economy. Moreover, over-population is, socially and economically, an extremely dangerous phenomenon, in so far as it causes stagnation in economic and cultural activities, which can only develop where and when there is scope for expansion. The development of an excessive pressure of population upon the available resources, with its unavoidable poverty and degradation, must therefore be prevented, but this can only be achieved by international co-operation, based on the recognition of two maxims: first, that the present depression being essentially due to structural causes, there exists the problem of a permanent residue of unemployment to be dealt with, and, secondly, that this problem, both in its origin and its effects, has a world-wide importance and must be dealt with accordingly. National schemes of land settlement alone will not, as a rule, solve this problem satisfactorily and international co-operation will be needed to enable this mass of population not only to subsist precariously on the land in overcrowded villages, but to bring their weight, as consumers, to bear again upon the market.

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# MONTHLY BULLETIN

OF

## AGRICULTURAL ECONOMICS AND SOCIOLOGY

### CO-OPERATION

#### Agricultural Co-operation in Poland.

##### I. — CHARACTERISTIC FEATURES OF POLISH AGRICULTURE.

Agricultural co-operation in the various countries is naturally adapted to the characteristics of the national agriculture in each case, and for this reason it appears essential here to give some account at the outset of these characteristics in the Poland of to-day.

An outstanding feature is the over-population of the countryside. The density of the population varies however in different parts of Poland, and while south-west Poland is the most populous, towards the north it shows a steady diminution. An excessive number of farms, too small in area to be self-sufficing, is the distinguishing mark of the more densely populated areas. The most conspicuous example is the province of Kracow, where in 1921 there were 291,000 farms, including some 52,000 independent farms with an area of over 5 hectares, while at the same date as much as 38.5 per cent. of the total agricultural area was occupied by dwarf farms of less than 5 hectares.

On the other hand in the province of Pomerania the general agrarian position resembles to a certain extent that of Denmark, although Pomerania has a higher percentage of farms with upwards of 200 hectares.

Speaking generally, large farms with more than 100 hectares, including the State forests, occupy 44.8 per cent. of the total area of Poland, and these are distributed fairly uniformly throughout the country. This class of farm derives, relatively speaking, the least advantage from the co-operative organisations, and for them the agricultural and trading societies are the most important.

The medium-sized farms, working from 20 to 100 hectares, are the best clients for all classes of co-operative societies, with the exception of the small Raiffeisen banks. These farms are very irregularly distributed throughout Poland, occurring in large numbers in the most northern districts, whereas in all the other areas they are only found exceptionally. According to the statistics of 1921, these farms occupied 9.6 per cent. of the total area covered by the returns.

Independent family farms of from 5 to 20 hectares are uniformly distributed throughout Poland and represent 30.8 per cent. of the total area, although in certain provinces they cover less than 20 per cent. while in two they account for more than 40 per cent. This particular class of farm is the main factor in the development of all kinds of agricultural co-operative societies.

The highest point of intensive cultivation is reached in the north-west, and agriculture becomes less intensive towards the south and east. The best farming is to be found in the province of Poznan, followed by the provinces of Lodz, Warsaw and Pomerania. The provinces of Kracow, Kielce, Lwow and Lublin are characterised by a less intensive type of farming, and in the remaining provinces and more particularly in those of Nowogrodek, Wilno and Polesia it is still less intensive. On the other hand the very small farms in Kracow, Kielce and Lwow are in some cases distinguished by a highly intensive farming. Thus attempts are made to develop stockbreeding, a certain proportion of the forage used being bought for the purpose, and in this way their need for the aid of co-operation is increased.

## II. - - LEGAL CONDITIONS IN WHICH THE CO-OPERATIVE MOVEMENT HAS DEVELOPED IN POLAND, AND THE INCIDENCE OF TAXATION ON THE SOCIETIES.

Since 1920 a law dealing with the co-operative societies and governing the whole co-operative movement has been in force in Poland. The statutory rules of each new society must be lodged with the Registration Court which is bound to be satisfied before registration that the rules are in accordance with the law.

In principle any individual or corporate body may be a member of a co-operative society, though the rules may provide for certain limitations to the full implications of this principle. The number of members may not be less than ten or, if the society is entirely made up of corporate bodies, less than three. Each member must hold at least one share, the effect of this provision being that all co-operative societies must be constituted on a basis of the shareholdings of their members, all shares being of equal value. Each member is entitled to one vote only whatever be the number of the shares held. His personal liability is proportionate to the number of his shares and cannot exceed this proportion, but it may be either limited or unlimited. In the event of the bankruptcy of the society, members may be required to pay supplementary quotas in proportion to their liability as measured by their holdings. After realisation of the assets, the members of the society may be called upon to pay additional amounts in proportion to their holdings, if so required by the situation as then revealed. Moreover, if after the lapse of six months from the date when the calculation was made, the deficit remains uncovered, the liquidator may legally constrain the members, as jointly and severally liable, to make good the deficit within the limits of their respective liabilities.

Each co-operative society is required to have an executive committee and a council and members of the executive committee are ineligible for service on the latter body. The general administration of the society is in the hands of the executive committee, while the duties of the council consist in the supervision of the activities of the committee in carrying out the business of the society, and in auditing the balance sheet at the close of the financial year before submission to the general meeting for approval. The council has the power at any time to relieve the members of the executive committee of their duties, and if, in accordance with the rules, an election is due, a similar course may be followed. Members of

the council are not eligible to receive allowances from the funds of the society.

Supreme authority is vested in the general meeting, but an action in law can be brought against any resolution of the meeting which is not in accordance with the terms of the law and of the rules of the society. The law contains detailed instructions as to the form in which the annual statements should be drawn up, and makes provision for the audit of the business transactions of the society by public officials. Thus each society must submit to compulsory audit every two years. No special authority is made responsible for carrying out this audit, this duty being delegated officially to the special Audit Unions of the co-operative societies, which are groupings of societies resembling those in other countries, and are as a rule unconnected with their trading and financial central organisations.

When a society is not a member of an Audit Union, the Co-operative Council, which is a State body, exercising a general control over the whole co-operative movement, appoints the auditor. This Council gives authority to the Audit Unions to exercise their functions, it appoints private auditors, etc.

The Polish law on co-operation is characterised by a certain extremist bias and in a measure places the co-operative societies in opposition to capitalist organisations. As stated above, no individual member has more than one vote, even if he holds more than one share, and proxy voting is not allowed. The share dividend must not exceed by more than two per cent. the highest discount rates of the Bank of Poland, in accordance with the law in force for any given year. On the other hand, the rules of the society may include clauses authorising the payment to members of a part of the revenue of their society, in proportion to the extent to which they have made use of its services. Thus members who have delivered milk to a co-operative dairy can obtain supplementary premiums for each litre of milk supplied, paid out of the net income of the society. This income may also be utilised for the benefit of the reserve fund or for purposes of public utility. In this way the importance of the part exercised by capital in the Polish societies is artificially whittled down, and for the most part public opinion is opposed to this attitude, which it considers prejudicial to the development of the movement.

Co-operative societies in Poland enjoy valuable privileges as regards taxation, but in order to acquire the right thereto, they must belong to an Audit Union approved by the State. Societies which fulfil this condition are exempt from income tax on their transactions with their own members, and it should be noted that in Poland such bodies as joint stock companies, etc., pay income tax in the same way as individuals. On the other hand they are expected to pay the tax at the normal rate on any business conducted on behalf of non-members, and all profits thus obtained must be allocated to the reserve fund of the society. Any society which fails to respect this regulation will be refused exemption from the tax on the returns arising out of business transacted with its members.

In addition the co-operative societies are only able to obtain trading certificates in a class inferior to that which non-co-operative businesses are required to possess; thus they are greatly advantaged as regards the payment of tax on the business turnover. The small co-operative credit societies which make loans

to their members are completely exempt from the payment of the tax, provided that the amount of such loans does not exceed 1,200 zlotys in each case. All other co-operative societies pay a tax on one fourth of their turnover, provided that the returns from these transactions with non-members are paid into the reserve fund. Failure to observe this regulation involves payment of the tax on half the volume of business.

### III. -- 'THE BEGINNINGS OF THE CO-OPERATIVE MOVEMENT IN POLISH AGRICULTURE.

In Poland four classes of co-operative organisation in agriculture may be distinguished, each of which has its special characteristic features, and its own particular underlying theory. These include the two great Polish Unions: the Union of the Polish Co-operative Associations (*Unja Związków spółdzielczych w Polace*), and the Confederation of the Unions of Agricultural Co-operative Societies of the Republic of Poland (*Zjednoczenie związków spółdzielni rolniczych Rzeczypospolitej Polskiej*); the Ukrainian Co-operative Societies, and the German Agricultural Co-operative Societies.

(a) *The Union of the Co-operative Societies in Poland and its underlying principles.* — The co-operative societies which are members of the Union for the most part carry out their work in the area that formerly belonged to Prussia and its basic principles have been developed there also. Polish society in this part of the country countered the policy of the Prussian Government with a theory of an economic organisation pushed to its extreme limits as the weapon that seemed likely to be the most effective. The attainment of the end desired would entail efforts to construct social life in Poland on the lines of the normal European pattern. To this end it would be necessary to build up a middle and particularly a lower middle class such as hitherto was non-existent in Polish Society, which consisted entirely of land owners and rural workers. Moreover there was a shortage of capital in Poland.

Given these conditions it was considered that a co-operative movement, embracing all classes and taking the form of substantial societies, specially in the field of credit, might play an important part and become more particularly an economic centre for the third estate. In addition it was felt that peasants possessing well managed farms, such being in the majority, should also be regarded as properly belonging to the third estate, but it was decided that first and foremost this third estate in the true sense of the term (that is to say, the artisan, small shopkeeper and small manufacturer class), should be recruited from among the peasants. Hence co-operative societies must be established, not only in order to meet the requirements of the farms, but also to have regard to the needs of the members of the family of the agriculturist and to provide the means required for setting up and carrying on small business enterprises in the towns themselves. In this way it will become possible to maintain the farm holdings in their integrity and to encourage the passage of the children of the agriculturists into the towns and so to reinforce the third estate.

Bishop Adamski, one of the founders and for several years President of the Union, thus defined its main objects:—

“ The Union must put itself in the forefront of the national economic life and make itself for the great mass of the population of Poland the predominantly Polish form of economic organisation ; it must become the organising force and the unifying economic factor for those classes of society which lie outside the purely capitalistic system, instructing every citizen of Poland in economic principles, in the methods of concentrating capital and in the theory of economic organisation ; it must encourage in the Polish people a spirit of enterprise and a capacity for effective action, assisting individuals to establish workshops for the production of all classes of goods, even on a small scale and providing material protection so that the small factories and workshops of Poland may develop and gain strength, thus laying the foundation for an independent national industry and commerce, supplying its necessities to an agriculture developed on normal lines.

“ Co-operation in Poland depends on the success of its efforts to make itself the most powerful and the most effective factor in the economic emancipation of Polish society. ”

Furthermore the following declaration was made by the Bishop :—

“ The Union, in developing this line of policy, should consider that one of its most important duties is to provide credit for the sons of the rural workers wishing to become artisans or to engage in trade, with the object of assisting them to establish workshops and business premises, and also to provide loans in order to make it possible for persons inheriting farms, which should be worked under a single management, to redeem the shares to which their brothers and sisters are entitled. ”

Although these views were expressed after the reconstruction of Poland and therefore at a time when the pressure of German influence was no longer felt, they have their origin in an attitude of mind which grew up in Polish Society during the period of the German domination.

The principles influencing the co-operative societies in the former Russian and Austrian territories now belonging to the Union were by no means so clear-cut as these but they were also imbued with the idea of the concentration of Polish capital and of the financial betterment of Polish Society and in particular of the third estate.

Since however after the reconstruction of Poland, foreign capital began to invade the Polish Banks, the idea of a constant struggle with an economically stronger foreign nationality inevitably persisted and is clearly manifest in the above quoted words of Bishop Adamski.

The Union was founded in 1925 and includes the four following Audit Unions :—

(1) The Union of the Co-operative Societies at Poznan (*Zwiazek Spolek Zarobkowych i Gospodarczych*) established in 1871, the oldest union of co-operative societies in Poland ;

(2) The Union of Co-operative Societies at Lwow (*Zwiazek Stowarzyszen Zarobkowych i Gospodarczych*) established in 1873 ;

(3) The Union of Polish Co-operative Societies at Warsaw (*Zwiazek Spoldzielni Polskich*) established in 1918 and representing in a reorganised form another co-operative organisation established in 1903, called the "Co-operative Commission."

(4) The Audit Union of the Co-operative Societies of the Farmers' Clubs at Kracow (*Zwiazek Rewizyjny Spoldzielni Kolek Rolniczych*), established in 1919.

(b) *The Confederation of the Unions of Agricultural Co-operative Societies of the Republic of Poland.* -- The Confederation is indebted for the principles which at present govern its policy to Dr. François Stefczyk whose work before the War in Galicia so largely contributed to the rise of a special agricultural co-operative movement in that part of Poland. The area of Dr. Stefczyk's activities lay in the countryside of Galicia, where the farms are pre-eminently small and poor, though the families of the peasants of the district were assisted by the emigrants, who supplied them with considerable sums of money.

In such conditions it was considered inopportune to establish large scale co-operative societies, as had been done in the former Prussian territory, and the institution of banks of the Raiffeisen type seemed to be more appropriate to the needs of the case.

Hence Dr. Stefczyk's work was mainly inspired by Raiffeisen's principles but his strong personality brought about a quite new conception of co-operation, which he succeeded in infusing into the agricultural co-operative movement in Galicia.

According to Dr. Stefczyk, co-operation is an independent social and economic movement, the object of which is to improve the social structure by inculcating a spirit of human solidarity, of mutual aid and collaboration, and of neighbourly feeling. He, however, had no desire to modify the general principle of the social structure of the country, as is shown by his own statement, which runs as follows:—

"It is not the purpose of agricultural co-operation gradually to transform individual holdings into large collective farms, the members of the societies as workers simply sharing in the division of the profits deriving from their joint labours. On the contrary, as regards private property, it is the purpose of co-operation to strengthen the productive capacity of the various farm-holdings and the social independence of their owners."

Stefczyk laid great stress on the necessity for character training among the members of the societies and the workers and held that the moral and material betterment of the members should be one of the principal objects of each co-operative society. The farms should be set free from the influence of capitalist agents acting as middlemen, and the general aim should be to introduce scientific methods into farming work, to put the farms on an industrial basis, and to increase profits. Following the principles of the Rochdale Pioneers, Stefczyk pronounced in favour of equality of voting rights in the co-operative society, and of the division of the returns in accordance with the profits which the members had themselves derived and not in proportion to their share-holdings. He also



advocated the institution of an intangible reserve fund and his principles received full consideration in the actual legislation on co-operative societies.

Agricultural co-operative societies in the former Russian territory before the war were in part based on the Raiffeisen system.

After the reconstitution of Poland most of the co-operative societies in the former Russian territory accepted the doctrines of Stefczyk. The Confederation of the Unions of Co-operative Societies of the Polish Republic (*Zjednoczenie Związków Spółdzielni Rolniczych Rzeczypospolitej Polskiej*) to which reference was made above, was established at a later date and was for part of the time under the direct management of Dr. Stefczyk.

Poland has a large number of agricultural co-operative societies, distinguished by the fact that, without taking part in the general agricultural movement associated with the agricultural confederations, they have made every effort to work in close connection with these bodies. The directors of the agricultural co-operative movement are at present in agreement with Dr. Stefczyk in their view that it forms an independent social and economic departure.

The Confederation of the Audit Unions of Agricultural Co-operative Societies of the Republic of Poland was founded in 1924 and is made up of the following Audit Unions:—

(1) The Audit Union of Agricultural Associations at Warsaw (*Związek Rewizyjny Spółdzielni Rolniczych*), which works in the former Russian territory and has the largest membership;

(2) The Audit Union of Agricultural Associations at Lwov (*Patronat Spółdzielni Rolniczych we Lwowie*), organised by Dr. Stefczyk in 1899;

(3) The Cieszyn Audit Union of Agricultural Associations (*Związek Spółek Rolniczych w Cieszynie*) which works in the area of the two districts to the south of the Department of Silesia;

(4) The Audit Union of Polish Raiffeisen-Stefczyk Associations at Katowice (*Związek Rewizyjny Polskich Spółdzielni Raiffeisena-Stefczyka*), which serves the 6 districts north of the Department of Silesia.

(5) The Audit Union of Agricultural Associations of Toruń (*Związek Rewizyjny Spółdzielni Rolniczych*), which operates in the territory of the Province of Pomerania, of Poznań and of the four districts of the Province of Warsaw.

(c) *The Ukrainian Co-operative Movement.* — The Ukrainian population largely consists of agriculturists and the political leaders ascribe particular importance to the organisation of co-operation. In this way they are brought into contact with the great mass of the people and are able to offer students, who have completed higher courses of instruction, employment, involving collaboration with the agriculturists and service as directors of the co-operative movement.

It follows therefore that the political factor plays an important part in the movement which has however preserved many sound financial features. Its most conspicuous characteristic lies in a tendency to set up small trading co-operative societies which meet the requirements of the small farms and farm households. These are rather of the nature of co-operatives for the supply of food stuffs than true agricultural trading societies. The leaders of the movement

make special efforts to stimulate and keep up a national spirit through these societies while at the same time raising their financial standard. There are two Audit Unions at Lwow, namely, the Audit Union of the Ukrainian Co-operative Societies (*Zwiazek Rewizyjny Spółdzielni Ukrainskich*) and the Ruthenian Audit Union (*Ruski Zwiazek Rewizyjny*). Their names reflect two political movements, the leaders of the first give the name of "Ukrainian" to their population while those of the second speak of "Ruthenian."

(d) *The German Agricultural Co-operative Movement.* -- In certain parts of the former Prussian territory a considerable percentage, though everywhere a minority, of the population is still German and possesses its own co-operative societies, to which before the war the Poles were unwilling to belong and therefore formed their own independent societies. These conditions brought about the simultaneous and parallel development of two movements, a German and a Polish, which were completely independent. The Prussian Land Settlement Commission, charged with establishing German cultivators on the Polish territory that formerly belonged to Prussia, took particular trouble to organise co-operative societies for the settlers and thus also contributed to keep the two movements apart. At the same time German co-operation was mainly founded on Raiffeisen principles.

Up to the present the separation between the German and the Polish societies has been maintained. The main object of the German societies is to keep the German holdings at their present dimensions, to safeguard the German population from possibilities of assimilation and to take charge of its economic and social organisation.

There are three Audit Unions for the German Societies in the former Prussian territory, two at Poznan and the third at Grudziadz. There are in addition two German Audit Unions in other parts of Poland.

#### IV. — GENERAL STATISTICS OF CO-OPERATION IN POLAND.

The State Council of Co-operative Societies to which reference was made in Section II publishes general statistical tables for co-operation in Poland. The figures given are, however, too high for they include co-operative societies officially registered but not as yet in working order, and also co-operative societies which are in process of liquidation. For purposes of comparison, however, the value of the figures contained in the tables is as good as could be wished.

Table I gives an idea of the development of the co-operative movement during the period 1924-1930, which was on a quite considerable scale, more particularly from the point of view of the number of co-operative societies belonging to the Audit Unions which during the period increased by 100 per cent.

Table II contains figures showing the distribution of the co-operative societies under different categories as at the end of 1930. Among the agricultural societies the credit banks are the most numerous and the general co-operative societies for the supply of requisites come second on the list, though herein are

TABLE I. — *Number of Co-operative Societies in Poland.*

Year	Total Number of Co-operative Societies	Number of Co-operative Societies belonging to the Audit Unions	Percentage Ratio to the Total Number of Societies
1924 . . . . .	10,790	6,138	56.9
1925 . . . . .	12,409	6,417	51.7
1926 . . . . .	13,909	7,553	54.3
1927 . . . . .	15,729	8,857	56.3
1928 . . . . .	16,349	10,279	62.9
1929 . . . . .	17,476	11,239	64.3
1930 . . . . .	18,411	11,956	64.9

TABLE II. — *Number of Co-operative Societies at the end of 1930.*

Type of Co-operative Society	Total Number in Poland		Co-operative Societies belonging to the Audit Unions	
	Number	Percentage	Number	Percentage
Co-operative Supply Societies.				
(a) Consumers' Societies . . . . .	3,131	17.0	1,258	10.5
(b) Building Societies . . . . .	904	4.9	238	2.0
(c) General Societies . . . . .	149	0.8	39	0.3
Co-operative Credit Banks.				
(a) Agricultural . . . . .	4,429	24.1	3,512	29.4
(b) General, workers, etc. . . . .	2,770	15.0	1,830	15.3
Agricultural Co-operative Societies:				
(a) General Societies for the Supply of Requisites . . . . .	3,770	20.5	3,183	26.6
(b) Special Societies for the Supply of Requisites . . . . .	145	0.8	63	0.5
(c) Dairy Societies . . . . .	1,875	10.2	1,420	11.9
(d) Manufacturing Societies. . . . .	103	0.6	84	0.7
(e) Subsidiary Societies . . . . .	175	0.9	71	0.6
Other types of Co-operative Societies . . .	954	5.2	258	2.2
Total . . .	18,411	100.0	11,956	100.0

included 2,547 Ukrainian societies which are in reality solely concerned with the supply of food stuffs. It follows that the dairy societies should really be ranked second and the societies for the supply of requisites third only. The number of the other types of societies is relatively small.

Table III contains figures showing the development of the co-operative societies belonging to the Audit Unions during the period 1924-29 and is limited to such societies as have furnished returns. The number of the agriculturist members in 1929 was 1,625,000. The value of the shares held amounted to 114,000,000 zlotys and the amount of the reserve and special funds was also 114,000,000 zlotys, and the total shown in the final statement was 1,193 million zlotys, as against 133 million zlotys in 1924.

TABLE III. — *Development of Polish Co-operative Societies belonging to the Audit Unions during the period 1924-29.*

Year	Number of Co-operative Societies covered by Statistics	Number of Members in thousands		Members' Shares	Funds	Total shown by Balance Sheet
		Total	Farmers	in thousands of zlotys		
1924 . . . . .	4,171	—	—	12,899	22,058	133,445
1925 . . . . .	5,977	1,764	765	28,678	34,025	256,260
1926 . . . . .	6,762	1,823	910	40,010	40,329	375,854
1927 . . . . .	7,995	2,174	1,276	64,235	55,731	609,492
1928 . . . . .	9,118	2,475	1,462	98,181	73,743	1,106,325
1929 . . . . .	10,392	2,731	1,625	114,125	113,620	1,193,354

Table IV contains a list of the principal Audit Unions in Poland and gives figures showing the number of associated agricultural co-operative and auxiliary societies.

The figures quoted in the above statistical tables will be discussed in detail in the sections which follow.

TABLEAU IV. — *General Statistics of the Co-operative Societies belonging to the Credit Unions as on 31 December 1930.*

Name of the Group of Societies	Co-operative Credit Banks		Agricultural Societies for the Supply of Requisites		Co-operative Societies		
	Agri-cultural	Non agri-cultural and mixed	General	Special	Dairy Societies	Societies for the transformation of agri-cultural products	Subsidiary Societies
I. — Confederation of the Unions of Agricultural Co-operative Societies (Zjednoczenie Związków Spółdzielni Rolniczych).	2,854	31	175	44	948	22	38
(1) The Credit Unions of Agricultural Associations at Lwów (Patronat Spółdzielni Rolniczych we Lwowie) . . . . .	1,150	—	65	28	315	7	4
(2) The Cieszyn Union of Agricultural Associations (Związek Spółek Rolniczych) . . . . .	54	6	1	3	3	—	12
(3) The Audit Union of Agricultural Associations at Warsaw (Związek Rewizyjny Spółdzielni Rolniczych) . . . . .	1,320	11	103	8	615	11	8
(4) The Audit Union of Polish Raiffeisen-Stefczyk Associations at Katowice (Związek Rewizyjny Polskich Spółdzielni Raiffeisena-Stefczyka) . . . . .	186	12	2	—	—	—	10
(5) The Audit Union of Agricultural Associations at Toruń (Związek Rewizyjny Spółdzielni Rolniczych) . . . . .	144	2	4	5	15	4	4
II. — The Union of Polish Co-operative Societies (Unja Związków Spółdzielni w Polsce). . . . .	—	752	247	—	187	17	2
(1) The Union of Co-operative Societies at Poznań (Związek Spółdzielni Zarobkowych i Gospodarczych) . . . . .	—	249	82	—	51	12	—
(2) The Unions of Co-operative Societies at Lwów (Związek Stowarzyszeń Zarobkowych i Gospodarczych) . . . . .	—	179	3	—	—	—	2

Name of the Group of Societies	Co-operative Credit Banks		Agricultural Societies for the Supply of Requisites		Co-operative Societies		
	Agricultural	Non agricultural and mixed	General	Special	Dairy Societies	Societies for the transformation of agricultural products	Subsidiary Societies
(3) The Union of Polish Co-operative Societies at Warsaw (Związek Spółdzielni Polskich) . . . .	—	324	43	—	136	5	—
(4) The Audit Union of the Co-operative Societies of the Farmers' Clubs of Crakow (Związek Rewizyjny Spółdzielni Kółek Rolniczych w Krakowie) . . . .	—	—	119	—	—	—	—
Audit Union of the Ukrainian Co-operative Societies at Lwów (Związek Rewizyjny Spółdzielni Ukraińskich) . . . . .	191	125	2,547	?	148	1	10
Ruthenian Audit Union at Lwów (Ruski Związek Rewizyjny) . . . . .	25	3	127	1	14	—	—
Audit Union of the German Co-operative Societies in Poland at Poznań (Związek Spółdzielni Niemieckich w Polsce) . . . .	105	40	28	9	18	17	8
Audit Union of the Agricultural Co-operative Societies in Western Poland at Poznań (Związek Spółdzielni Rolniczych na Polske Zachodnia) . . . . .	77	19	14	—	21	16	9
Audit Union of German Co-operative Societies in Poland at Lodz (Związek Spółdzielni Niemieckich w Polsce) . . . . .	77	5	1	2	1	1	—
Audit Union of Rural Co-operative Societies of the Department of Pomerania at Grudziadz (Związek Spółdzielni Wieljskich województwa Pomorskiego) . . . . .	62	4	40	3	53	10	4
Other Unions . . . . .	61	842	4	3	—	—	—
Total . . .	3,512	1,830	3,183	63	1,420	84	71

(To be continued).

ZDZISŁAW LUDKIEWICZ.

## MARKETING OF AGRICULTURAL PRODUCE

### World Production of and World Trade in Table Grapes (*concluded*).

#### (b) *Importing Countries.*

##### 1. — Europe.

#### GREAT BRITAIN AND NORTHERN IRELAND.

The English home production of table grapes is of subordinate importance only. The fruit is grown in the open and in hothouses; the former cultivation is mainly in the Channel Islands, the Guernsey grapes having a high reputation, the latter in the towns within the immediate neighbourhood of London, the valley of the river Lea being the centre of the glasshouse cultivation. In both areas the production has been in existence for a full century, but during the last 20 years there has been no great extension. In 1911-13 the yearly export from the Channel Islands to England was 18,000 cwts., and from 1927 to 1929 the export was each year 17,000 cwts. The figures of the hothouse production are not known; at most the whole of the home production might cover ten per cent. of the consumption.

In consequence of the great demand for fresh fruit there was a considerable expansion of the import of table grapes during the years 1860-1895. From that time, and actually up to the beginning of the world war, the imports previously remarkably uniform showed a slight decrease, so that the consumption per head in imported grapes fell from 3.1 lbs. (1900 to 1908) to 2.7 lbs. (1909 to 1913). The consumption of oranges fell during the same time from 14.7 lbs. to 13.5 lbs. per head.

The cause of this diminution is generally believed to have been the increased importation of bananas which rose by about 150 per cent. In the post-war time, especially during the last five years, the imports of all three kinds have risen: the banana import was higher by 100 per cent. in 1927-29 as compared with the pre-war time, the import of oranges by about 50 per cent., and the import of grapes by somewhat less than 50 per cent. The increase in volume of the table grapes import is the more remarkable, as it is combined with a much more pronounced increase in value. This is explained on the one hand by the rise in price of Spanish grapes which in these years were in great demand on the world market and held the leading place among the grape imports into England, on the other hand by the growing proportion of the Belgian and Netherland supplies of hothouse grapes. The English consumer is accustomed to a very high standard in table grapes, and for this reason the relatively cheap grapes of Spanish or French origin are not often to be found on the market.

In the international trade in table grapes Great Britain takes the second place among the importing countries. London is the port taking the largest imports, and from the docks the grapes are sold on commission to Covent Garden and Spitalfields. There are also direct imports to other ports along the coast. In examining the following figures regard should be had, in addition to the terri-

torial changes occasioned by the setting up of the Irish Free State, to the increasing importation of overseas grapes, among which the South African grapes stand in the foremost place. These come on the British markets mainly during March when the season for Spanish grapes is quite over.

*Import of Table Grapes into Great Britain.*

	Average 1911-13	1928	1929	1930
Value in £100 . . . . .	7,523	20,178	20,177	18,418
Import in 100 cwts from:				
Belgium . . . . .	103	541	570	525
Channel Islands . . . . .	177	153	154	268
Netherlands . . . . .	—	479	683	660
Portugal . . . . .	476	342	412	383
Spain . . . . .	5,434	5,962	5,905	4,116
South Africa . . . . .	44	436	489	483
Argentina . . . . .	—	198	182	172
Australia . . . . .	—	24	67	40
Total in 100 cwts. . . . .	6,336	8,392	8,638	6,953

As the following table shows, the English markets supply Ireland, the Scandinavian countries, Finland and Canada, with grapes mainly Spanish.

The proportion of Spanish grapes imported directly into these countries is only small.

*Re-export of Table Grapes from Great Britain.*

	Average 1911-13	1927	1929	1930
Value in £100 . . . . .	1,374	972	1,110	823
Re-exports in 100 cwts. to:				
Denmark . . . . .	—	2	5	4
Germany . . . . .	58	4	1	1
Finland . . . . .	—	47	38	17
Irish Free State . . . . .	—	127	150	117
Netherlands . . . . .	—	4	5	4
Norway . . . . .	75	6	15	15
Sweden . . . . .	—	16	24	20
Union of South Africa . . . . .	17	—	—	—
British India . . . . .	27	23	28	15
Ceylon . . . . .	—	19	28	18
Straits Settlements . . . . .	—	9	17	13
Brazil . . . . .	186	—	—	—
Canada . . . . .	251	36	27	10
Newfoundland . . . . .	22	20	16	9
United States . . . . .	306	11	15	5
Total in 100 cwts. . . . .	1,079	355	402	287



# IRISH FREE STATE.

The Irish Free State imports grapes through the English ports.

## *Import of Table Grapes into the Irish Free State.*

Year	In £100	In 100 cwt.		
		Total	Including imports from.—	
			Great Britain	Northern Ireland
1928 . . . . .	429	161	136	9
1929 . . . . .	412	182	142	9
1930 . . . . .	—	—	—	—

# THE THREE SCANDINAVIAN COUNTRIES AND FINLAND.

In 1929-30 the Northern lands took almost three per cent. of the whole of the table grapes as internationally handled, and in comparison with the pre-war time had nearly trebled their imports. Per head of the population there were imported by Norway, 0.65 kg., by Denmark 0.31 kg. by Sweden 0.30 kg., and by Finland 0.25 kg.

## *Import of Table Grapes to Denmark.*

Year	In 1000 crowns	In 100 quintals					
		Total	Including imports from				
			Belgium	Germany	Great Britain	Netherlands	Spain
Average 1911-13 . . . . .	79	36	—	15	4	—	14
1928 . . . . .	1,090	115	3	13	—	11	81
1929 . . . . .	1,156	132	3	14	1	17	91
1930 . . . . .	—	97	—	—	—	—	—

## *Re-export of Table Grapes from Denmark.*

Year	In 1000 crowns	In 100 quintals	
		Total	Including re-export to Sweden
Average 1911-13 . . . . .	2	1	1
1928 . . . . .	182	20	9
1929 . . . . .	86	13	5
1930 . . . . .	—	—	—

The higher import into Norway is to be attributed to the fact that the duty on table grapes is lower than it is in the other Scandinavian countries. The greater proportion of the grape exports into these countries is from Spain. In the cases in which Germany is shown as the supplying country, the grapes are partly Spanish and partly Italian, while the English supplies to these countries are almost wholly drawn from the Iberian peninsula.

*Import of Table Grapes into Finland.*

Year	In 1000 Finnish marks	In 100 quintals			
		Total	Including imports from —		
			Germany	Great Britain	Spain
1928 . . . . .	8,873	90	30	20	40
1929 . . . . .	7,788	87	30	10	40
1930 . . . . .	6,819	78	—	—	—

*Import of Table Grapes into Norway.*

Year	In 1000 crowns	In 100 quintals		
		Total	Including imports from	
			Germany	Spain
Average 1911-13 . . . . .	507	80	—	—
1928 . . . . .	1,328	142	8	122
1929 . . . . .	1,687	168	11	134
1930 . . . . .	—	170	—	—

*Import of Table Grapes into Sweden.*

Year	In 1000 crowns	In 100 quintals						
		Total	Including imports from —					
			Belgium	Denmark	Germany	Great Britain	Netherlands	Spain
Average 1911-13 . . . . .	338	36	—	3	12	9	—	10
1928 . . . . .	1,797	142	5	11	20	6	19	72
1929 . . . . .	1,995	173	5	14	27	10	21	82
1930 . . . . .	—	185	—	—	—	—	—	—

GERMANY.

Vine-growing in Germany was until a few years ago solely directed towards production of wine grapes. The fresh fruit of German production was consumed locally only. Under the influence of the crisis in regard to marketing of wine,

an adoption of table grape production has lately been strongly advocated, and on the one hand the introduction of hothouse cultivation, and on the other the adaptation of the existing cultivation, have been urged but so far with no great result. The establishment of a hothouse cultivation of any importance is unlikely, since the very considerable possibilities in Germany were not recognised sufficiently early and it now seems impossible to overtake the long start which the Belgian and Dutch growers have in respect of production and marketing technique. Any extensive transformation of the open air cultivation of wine grapes into that of table grapes is made difficult from the fact that the German grapes with the exception of a few varieties are not well suited for sale as fresh fruit. The fruit as a whole is extraordinarily thin-skinned, the berries are small, dark green and sourish, and cannot compete as a rule with the imported table grapes, although by connoisseurs they are prized for their flavour which is often highly aromatic. The " Riesling " in particular cannot be sold as a table grape.

The grapes placed on the market in the two last years were exclusively wine grapes and consisted in the first place of the " Gutedel " variety which is prevalent in the region where the Markgräfer wine is produced. " Gutedel " is a very fine grape, relatively large and of a golden yellow colour. The " Portugieser, " a blue variety, was also sold as a table grape, and also in smaller quantities the " Silvaner. " The most important region of production is the Palatinate, but table grapes are also sent to the market from the vine-growing area of Hesse. The Middle Rhine vine growing areas, where the neighbouring wholesale fruit markets of Coblenz, Neuwied and Cologne provide excellent marketing facilities, were not in a position to supply table grapes in large quantities. For the same reasons the deliveries from the Baden and Württemberg areas have been insignificant. The best sale for table grapes has been mainly in the large towns which lie near the respective vine-growing areas. Comparatively small deliveries only were made to Berlin, Leipzig and other principal markets. Up to the present there are no official statistics of the trade in table grapes. According to the returns of the German State Railway Company somewhat more than 20,000 quintals of wine grapes of German origin were sent by rail during 1930. In consequence however of the short distances to be covered, transport by lorry or camion bulks larger than forwarding by rail. From information supplied by the German Vine-growing Federation (*Deutscher Weinbau-Verband*), in 1930 wine grapes forwarded by camion might be estimated at about 50,000 quintals, so that altogether something over 70,000 quintals of grapes of German production came on the market. In 1931 in spite of the extensive propaganda carried on by the vine growers' associations fewer grapes were marketed than in 1930. This may have been due to the wet season which affected the quality of the fruit, while at the same time it resulted in prices being lower than for imported grapes, the retail prices being from 20 to 30 pfenning per kg., barely covering the costs of gathering.

The German table grape production in 1930 amounted in volume to scarcely one tenth of the import. The imports into Germany showed a rapid increase over the last thirty years, apart from the interruption of trade caused by the world war and the inflation.

An increase from 181,000 quintals for 1901-03 to 701,000 quintals for 1928-1930 is to be noted. The consumption per head at present of imported grapes is 1.1 kg. The grapes primarily coming on the German markets are the cheap kinds from Italy, France and Hungary, but nearly all the European exporting countries are represented. Of recent years a small import from Argentina has come into existence.

*Import of Table Grapes into Germany.*

	Average 1911-13	1928	1929	1930
Value in 1000 RM. . . . .	13,673	33,650	38,631	31,499
Quantities in 100 qls. imported from:				
Belgium . . . . .	35	17	26	14
Bulgaria . . . . .	—	—	374	159
France . . . . .	997	3,191	3,791	1,483
Greece . . . . .	—	—	—	12
Italy . . . . .	1,675	1,752	2,112	3,355
Yugoslavia . . . . .	—	5	—	62
Netherlands . . . . .	17	209	214	249
Portugal . . . . .	152	51	71	67
Rumania . . . . .	8	32	27	33
Spain . . . . .	693	1,041	1,215	879
U. S. S. R. . . . .	—	22	24	24
Hungary . . . . . (1)	39	22	51	643
Algeria . . . . .	81	—	21	18
Turkey . . . . .	34	—	—	—
Argentina . . . . .	—	14	27	21
Total . . . . .	3,644	6,373	7,629	7,026

(1) Including Austria.

THE REMAINING COUNTRIES OF CENTRAL EUROPE.

In addition to Germany, the countries of Central Europe which are to be regarded as importing table grapes are Switzerland, Austria and Czechoslovakia. Although in each of these countries home grown table grapes also appear on the markets, in Austria and in Switzerland the quantities are inconsiderable as compared with the imported grapes. In Czechoslovakia the production of table grapes is relatively large; and in fact there is a small export. Before the war the area of Austria as now existing, and that of Czechoslovakia, obtained table grapes, in so far as the home production was insufficient, mainly from regions then lying within the Austrian-Hungarian monarchy, in particular from Southern Tyrol and Dalmatia. Taken together the imports into Austria-Hungary for example in the years 1911-13 were less than one fifth of the quantities imported into Switzerland over the same period. On the contrary the Austrian Republic imported in the years 1929-30 on an average more than ten times as many table grapes as did Austria-Hungary taking the average of 1911-13. The imports into Switzerland bear about the same proportion to the prewar imports as do those of Germany and the Scandinavian countries, *viz.* they have risen by about 250 per cent. The per capita consumption of imported table grapes in Switzerland is 2.9 kg. and in Austria 1.8 kg. The relatively very high per capita con-

sumption in Switzerland is connected, *inter alia*, with the much developed tourist traffic. The corresponding Czechoslovakian figure is 0.24 kg., although the imports have nearly doubled in the last few years.

These three Central European states import grapes mainly from France, Italy and South East Europe. Spanish grapes are imported only in small quantities.

*Export of Table Grapes from Austria-Hungary.*

Year	In 100 Kr.	In 100 quintals	
		Total	Including exports to Germany
Average 1911-13 . . . . .	145	33	30

*Import of Table Grapes into Austria-Hungary.*

Year	In 100 fr	In 100 quintals		
		Total	Including imports from:—	
			Germany	Spain
Average 1911-13 . . . . .	843	101	62	36

*Import of Table Grapes into Austria.*

Year	In 100 Sch.	In 100 quintals						
		Total	Including imports from:—					
			Bulgaria	France	Italy	Yugo-slavia	Spain	Hungary
1928 . . . . .	3825	686	89	7	328	73	54	129
1929 . . . . .	5874	1165	144	7	399	80	79	449
1930 . . . . .	4935	1255	93	1	312	188	37	604

*Import of Table Grapes into Czechoslovakia.*

Year	In 100 Kc.	In 100 quintals						
		Total	Including imports from:—					
			Germany	Italy	Yugo-slavia	Austria	Spain	Hungary
1928 . . . . .	8079	163	5	24	43	4	40	2
1929 . . . . .	15457	368	12	61	43	10	62	15
1930 . . . . .	1338	335	—	38	69	—	47	15

*Export of Table Grapes from Czechoslovakia quintals.*

Year	In 1000 Kc.	In 100 quintals	
		Total	Including export to Poland
1928 . . . . .	835	17	17
1929 . . . . .	769	23	22
1930 . . . . .	592	24	23

*Import of Table Grapes into Switzerland (in 100 quintals).*

Year	In 1000 fr.	In 100 quintals				
		Total	Including import from.			
			France	Italy	Spain	Algeria and Tunisia
Average 1911-13 . . . . .	1,832	456	179	224	25	15
1928 . . . . .	6,738	962	724	155	64	14
1929 . . . . .	6,444	986	724	171	68	18
1930 . . . . .	7,621	1,287	504	676	82	10

## POLAND AND THE BALTIC STATES.

Imports of table grapes into the Baltic States are very small or non-existent the tariff rates on table grapes being practically prohibitive for these countries in Estonia for instance the duty is 335 RM. per quintal. Latvia where the duty is somewhat lower, imports annually some hundred quintals. The Polish imports are larger, as although there is a high duty Poland has agreed to some preferential tariffs with certain important grape exporting countries. Polish imports of grapes have increased in the last few years only in connection with the trade treaties and in 1930 rose by leaps and bounds. The table grape import per head of population for the average of the two years 1929 and 1930 was 0.17 kg. Rumania is the chief country of supply, followed by Hungary, while in 1930 a considerable quantity of Spanish grapes came on the market.

*Import of Table Grapes into Poland.*

Year	In 1000 zlotys	In 100 quintals					
		Total	Including imports from:—				
			Italy	Rumania	Spain	Czechoslovakia	Hungary
1928 . . . . .	1,238	115	8	35	2	15	51
1929 . . . . .	2,213	295	11	—	1	32	132
1930 . . . . .	3,629	704	19	294	99	26	221

*Import of Table Grapes into Latvia.*

Year	In 1000 lats	In 100 quintals		
		Total	Including imports from:—	
			Germany	U. S. S. S.
1828 . . . . .	70	6	1	4
1929 . . . . .	78	6	2	3
1930 . . . . .	90	6	3	3

II. — Overseas Countries.

EGYPT.

Egypt is the natural market for the table grapes of the numerous producing regions lying within easy reach and possessing good transport facilities: Cyprus, Greece, Rhodes and Palestine. The larger towns, in particular Cairo, Alexandria and Port-Said, experience a glut of table grapes from these regions in the season. Although in Egypt as a whole there is only a limited consumption of grapes, the consumption of imported grapes per head of the Egyptian population is 0.79 kg. The earliest to arrive on the market are those from Palestine, while grapes from Cyprus, Rhodes and Greece make their appearance almost simultaneously. There is a great preponderance of grapes from Greece in the import taken as a whole.

*Import of Table Grapes into Egypt.*

Year	In 1000 Egyptian pounds	Total	In 100 quintals				
			Including import from				
			Greece	Rhodes	Cyprus	Palestine	Syria
1913 . . . . .	415	690	—	—	—	—	—
1928 . . . . .	956	1,196	799	95	210	51	40
1929 . . . . .	883	1,284	863	109	165	89	—
1930 . . . . .	1,168	1,027	656	86	151	97	—

THE ASIATIC IMPORTING COUNTRIES.

There is in some parts of the Far East and of British India a production of table grapes in some quantity, but grapes are also imported for the benefit of the large towns which are remote from the centres of indigenous production. In China the most important wine growing districts are Southern Manchuria and the peninsula of Shantung where the cultivation is carried on in the neighbourhood of the port of Che-foo. The Shantung grapes come on the market during

the whole year and are in special demand during the festivals in the winter. In Southern Manchuria some excellent varieties of table grapes are grown, which were introduced by the French missionaries and recall the Tokay grapes and the Emperor grapes of California. There was a special development of the production after the planting of vineyards by Japanese in the adjacent areas of Shantung. The grapes for the most part reach the markets of Harbin, Mukden and Peiping. In Japan the table grape production has been greatly extended during the last 25 years, and in this period the quantities gathered have increased from about 65,000 quintals to approximately 500,000 quintals. There are however so far no statistics establishing the respective proportions of wine grapes and table grapes. The introduction of glasshouse cultivation led to a further increase in the production. In Northern India at the foot of the Himalayas and in the Vale of Cashmir there are vineyards, and modern planting has been carried out by the English.

Table grapes are not shown separately in the import statistics of the countries of the Far East or of India, since the quantities imported are not very considerable. The imported grapes come mainly from California and during the period 1924-28 the total was about 7,500 quintals. Out of this about 275 quintals went to Japan, and rather more than 1000 quintals to China. In Japan a hundred per cent. duty acts as a check on the importation of grapes. Separate figures are available for the import into the Philippines which meets the requirements of the Americans resident there and the well-to-do Chinese.

*Import of Table Grapes into the Philippine Islands).*

Year	Total value in 1000 pesos	Total in 1,000 quintals	Including import from United States
1927 . . . . .	169	5	5
1928 . . . . .	381	11	11
1929 . . . . .	421	10	10

THE AMERICAN IMPORTING COUNTRIES.

In America large quantities of table grapes are regularly imported only by Canada, Brazil and Cuba. Canada leads in this respect, and its market is of great importance for the table grape cultivation of the United States, since the production of the States has exceeded internal requirements. The increase in the production in the States was paralleled by a steady increase in the export into Canada. The relative increase of the Canadian import in the period between 1911-13 and 1928-30 is larger than in any one of the more important European importing countries. During the years 1929-30 the import of table grapes was at the rate of 1.4 kg. per head of the population. The imports came almost entirely from the United States. The same holds good of the Cuban import,



where the per capita consumption is also relatively high, a fact explicable from the large proportion of North Americans in the population. Brazil imports nearly as large quantities as Cuba, but the Brazilian foreign trade statistics do not indicate the countries of origin. The corresponding export statistics show that Spain, Portugal, Argentina and the United States are almost equally concerned in the supply of grapes to Brazil. Of the other South American States Uruguay and Panama only have a small import of grapes.

*Import of Table Grapes into Canada.*

Year	In \$ 1000	In 100,000 lbs.		
		Total	Including import from	
			Great Britain	United States
Average 1911-13 . . . . .	343	55	—	—
1928 . . . . .	1,189	231	4	224
1929 . . . . .	1,021	344	3	340
1930 . . . . .	1,394	260	2	265

*Import of Table Grapes into Cuba.*

Year	In \$ 1000	In 100,000 libras (1927-29 in 1,000 quintals)	
		Total	Including import from United States
Average 1911-13 . . . . .	38	9	—
1927 . . . . .	212	26	26
1928 . . . . .	310	27	27
1929 . . . . .	—	18	—

*Import of Table Grapes into Brazil.*

Year	In 1000 milreis	In 100 quintals
Average 1911-13 . . . . .	1477	198
1928 . . . . .	8197	311
1929 . . . . .	6257	285
1930 . . . . .	5678	225

*Import of Table Grapes into Uruguay.*

Year	In 1000 pesos	In 100 quintals	
		Total	Including import from Argentina
1927 . . . . .	10	5	—
1928 . . . . .	27	14	13

*Import of Table Grapes into Panama.*

Year	In 1000 Balboas	In 100 quintals	
		Total	Including import from United States
1927 . . . . .	12	6	6
1928 . . . . .	16	7	7
1929 . . . . .	21	8	8

## NEW ZEALAND.

The imports in the post war period show a rising tendency, and in 1930 there were ten times the quantity of grapes imported as in 1912. The per capita consumption in 1929-30 was 0.25 kg. The increasing importance of the Australian supplies is to be noted.

*Import of Table Grapes into New Zealand.*

Year	In £100	In 100 cwt.		
		Total	Including import from	
			United States	Australia
Average 1911-13 . . . . .	23	10	0	10
1928 . . . . .	141	59	41	18
1929 . . . . .	152	65	52	12
1930 . . . . .	180	90	53	36

Prof. Dr. K. RITTER and Dr. M. GUTTFELD.

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- International Yearbook of Agricultural Statistics, Rome
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- Berichte über Landwirtschaft*, Berlin.
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- Marktrundschau für den Gartenbau, Preisberichtsstelle beim deutschen Landwirtschaftsrat und dem Reichsverband des deutschen Gartenbaues e. V.*, Berlin.

In addition use has been made of a large number of articles appearing in periodicals and also of works of reference which it is impossible for reasons of space to enumerate here.

## BIBLIOGRAPHY ON ECONOMIC AND SOCIAL QUESTIONS

Annuario italiano delle imprese assicuratrici, 1932 A X. Federazione Nazionale Fascista Imprese Assicuratrici. Roma, Milano.

[The National Fascist Federation of Insurance Companies has just published the 1932 Yearbook of the Insurance Companies operating in Italy. This publication contains the list of the members of the boards of directors and the budgets of 159 insurance companies operating in Italy. Of this number, 107 are private Italian concerns, 3 are state and state-controlled companies and 49 are foreign. The volume contains also very interesting data on the insurance industry in Italy as well as detailed information on the National Fascist Confederation of Credit and Insurance, such as the list of represented and associated companies, constitution, organs and duties of the Federation, rules regarding the working of consultative committees and of the Institutions on which the Federation is represented, the constitution, organs and duties of the National Fascist Fed-

eration of Credit and Insurance. Then follows a list of the committees and consortia formed among the insurance companies, a list of local insurance societies, of liquidating and bankrupt companies and concerns to which insurance operations have been forbidden, a list of appraisers of damages and lastly an index of persons and concerns mentioned in the yearbook.

The previous year the Federation published a second volume containing the text of laws, decrees and circulars regulating the insurance business in Italy].

F. A.

DVORÁK, Dr. Lad. Fr. — *La coopération agricole tchécoslovaque*. Prague, 1931. Union Centrale des Coopératives Agricoles, 74 pp.

[This study contains some interesting information on the origin, development and present conditions of the co-operative agricultural movement in Czechoslovakia. It has been written by Dr. Dvořák, Director General of the Union of Agricultural Co-operatives of Bohemia, and a well known figure in international co-operative circles.

A rich statistical and general documentation renders this work highly valuable for its readers, who can get, in a condensed form, a clear and complete idea of agricultural co-operation in Czechoslovakia].

G. P.

Staatslexikon, im Auftrag der Görres-Gesellschaft hrsg. von HERMANN SACHIER. 5., von Grund aus neubearbeitete Auflage. Freiburg i. B., Herder, 1926-32, 5 Bände.

[The 5th edition of this imposing encyclopedia in five large and well printed volumes was published after a complete revision and remodelling of former editions. It forms now a modern reference book of very wide scope. It is by no means restricted — as one might suppose from the title — to the field of politics, but treats social, economic, juridical and cultural questions as well, approaching them mostly from the Catholic viewpoint, which does not in any way prejudice the treatment of the various subjects in these volumes, which are extremely rich in interesting and up to date material. The five volumes contain more than 2,000 articles in alphabetical arrangement. A supplementary volume is in course of preparation. It will include, among other things, a detailed subject index to the whole work. A feature of general interest are the monographs on specific countries, which give in a short and concise way a picture of the whole political, economic and cultural atmosphere of the geographical area treated. The encyclopedia is also rich in biographies of important politicians, philosophers, and theologians, which are often accompanied by full page portraits.

The agriculturist, and more specially the agricultural economist, will be interested in a large number of articles, such as those on agrarian policy, agrarian socialism, agricultural co-operation, organization, settlement and similar questions. Also the staple commodities such as cereals, cocoa, tobacco, wine are treated in separate articles].

## PUBLICATIONS RECEIVED BY THE LIBRARY

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# MONTHLY BULLETIN

OF

## AGRICULTURAL ECONOMICS AND SOCIOLOGY

### CO-OPERATION

#### Agricultural Co-operation in Poland (*concluded*).

##### V. — CO-OPERATIVE CREDIT SOCIETIES.

(a) *General Remarks.* — Co-operative Credit Societies represent the most common type of co-operative society in Poland. The number of these banks, in which the majority of the members are agriculturists, was 4,429 on 31 December 1930, according to the figures supplied by the State Council of Co-operative Societies, while there were 2,770 institutions of this class in which the majority of members belong to other callings. The following data give some further particulars with regard to the societies which belong to the Audit Unions:—

On 31 December 1930 the Confederation of the Unions of Agricultural Co-operative Societies in the Polish Republic included in its membership 2,854 societies of a purely agricultural character and 31 societies of other types ;

The Federation of the Unions of Polish Co-operative Societies included 752 credit societies and all its other constituent societies may be considered as being of a mixed character ;

The other associations have a much smaller number of members.

Table IV shows how the societies are distributed among the various unions.

The credit banks are of two kinds, one, the small Raiffeisen banks known in Poland as Stefczyk banks and the other, the larger banks of the Schultze-Delitzsch type, usually called " popular banks ". The two types of bank are distinctly Polish in character and differ one from the other to a less degree than, for example, the German Raiffeisen banks from the Schulze-Delitzsch banks.

A distinctive feature of the Polish popular banks is that they endeavour to have a majority of agriculturist members to whom they grant loans for comparatively long periods, namely, up to three years by the extension of the bills of exchange. The Stefczyk banks also make loans for periods up to four years. Both types of bank, moreover, tend to become institutions with unlimited liability. The Stefczyk banks are supported by the Confederation of the Unions of Agricultural Societies and are described under (b) of the present chapter, while under (c) will be found an account of the popular banks.

The co-operative credit societies in Poland are looked upon as pioneers in the co-operative movement, particularly as regards the agricultural societies.

As was already stated in Chapter III when discussing the principles underlying the various Polish co-operative movements, the leaders have always laid particular stress on the development of the credit societies.

(b) *Co-operative Agricultural Savings and Loan Banks of the Raiffeisen Type.* — Table IV shows that the majority of the co-operative credit societies are members of the Confederation of the Unions of the Agricultural Societies of the Polish Republic, and at the end of 1930 the number of purely agricultural member societies was 2,854 out of a total of 3,512.

The distribution of the members of these societies is shown in Table V, from which it appears that in certain provinces the number of members of co-operative societies for every 1,000 farms is over 300. This figure is highest in Silesia of Cieszyn, where 50 % of the farms belong to a society. On the average there are stated to be 189 members of co-operative societies per 1,000 farms, though probably this figure is not absolutely correct

TABLE V. — *The Distribution of the Members of the Stefczyk Banks belonging to the Confederation of the Unions of Agricultural Co-operative Societies (Zjednoczenie Związków Spółdzielni Rolniczych) throughout Poland*

Province	Number of members of co-operative societies	Number of members per 1000 farms
Warsaw . . . . .	35,329	154
Lodz . . . . .	18,645	92
Kielce . . . . .	44,526	144
Lublin . . . . .	41,151	140
Bialistok . . . . .	34,400	188
Wilno (a part) . . . . .	27,907	345
Nowogrodek . . . . .	40,746	305
Polesia . . . . .	35,742	198
Vollhynia . . . . .	52,107	208
Pomerania . . . . .	5,535	62
Silesia of Cieszyn . . . . .	7,359	496
Kracow . . . . .	95,919	330
Lwów . . . . .	91,907	234
Stanislawow . . . . .	35,911	152
Tarnopol . . . . .	30,721	123
Total . . .	585,905 (1)	189

There was a considerable development in banks of the Raiffeisen type during the period before the war, which however brought about the downfall of the majority. Matters were made still worse by the fall in the value of the Polish

(1) Not including Upper Silesia, the Province of Poznan and part of the Province of Wilno.



currency and it became necessary to take steps to reconstitute the banks. However, by 1924, the number of banks belonging to the Confederation had already reached a total of 1,843, which rose to 2,709 and 2,843 in 1929 and 1930 respectively. The total volume of business transacted was 3,930,000 zlotys in 1924 but increased in 1929 to 92,885,000 zlotys and to 124,557,000 zlotys in 1930.

In 1924 the number of members was 227,030 and this figure rose to 591,263 in 1929 and to 689,418 in 1930. These figures show that the Stefczyk banks, which were members of the Confederation, showed the more rapid development.

Their characteristic feature lies in the fact that they are institutions with unlimited liability and that the value of each share is very low. They are in fact quite small institutions although their membership figures are higher than those of the Raiffeisen banks in many European countries. The members of the executive committee and of the council of supervision as a rule receive no payment for their services and only the cashier has the right to a modest salary.

The majority of the members belong to the small agriculturist class and, in most of the societies belonging to the Warsaw Audit Union, the membership was made up of farmers owning 5 to 20 hectares, followed by those whose holdings were from 2 to 5 hectares in extent. These two groups made up 78.1 per cent. of the total membership while 15.1 per cent. owned less than 2 hectares and 6.8 per cent. upwards of 20 hectares.

These figures differ slightly from those for other Unions but in any case the number of members farming more than 50 hectares is always very small, usually less than 1 per cent.

The statistics for the occupational distribution of the office bearers in the Stefczyk banks belonging to the Confederation are very characteristic; they also are mainly provided by the small farming class. Thus out of 7,690 members of the councils of supervision of the Warsaw Credit Union, 6,194 were small farmers and 788 only were school teachers, other callings being still more sparsely represented. Out of 3,482 members of the executive committees and 1,168 cashiers the numbers of small farmers were 2,489 and 497 respectively. These figures shew clearly that these societies work in close contact with the great mass of the rural population and that they therefore exercise a highly important educational influence on the peasant and peasant farmer class.

The work of the Stefczyk banks, members and non-members of the Confederation alike, in the field of credit has not as yet been adequately developed. Up to the present it has not been found possible to replace the funds they possessed before the depreciation of the currency by which they were wrecked. The banks belonging to the Confederation had arranged 428,000 loans for a total value of 113 millions zlotys in 1930, the average amount of each loan being 265 zlotys, though the average is only 166 zlotys in the Province of Wilno, the lowest figure recorded for Poland, while in Silesia, which gives the highest figure, the average is 831 zlotys. One society on the average grants loans during the course of the year to 156 members for an average total sum of 41,000 zlotys, the amount of any individual loan rarely exceeding 1,200 zlotys. In 1930 only 12.8 per cent. of the Stefczyk banks belonging to the Confederation made loans to members for sums exceeding this amount.

The period for the repayment of the loans is as a rule more than one year and in 1930 the average was 19.5 months.

The following table gives figures showing the purposes for which the loans were granted; they relate to the Warsaw Union and the Lwów Union or "Patronat".

<i>Warsaw Union :</i>		<i>Lwów Union :</i>	
Live stock . . . . .	22.8 %	Repayment of debts . . . . .	29.7 %
Repayment of debts . . . . .	21.5 %	Buildings . . . . .	15.9 %
Buildings . . . . .	17.1 %	Live stock . . . . .	14.9 %
Purchase of land . . . . .	7.4 %	Purchase of land . . . . .	14.9 %
Payments to members of the family . . . . .	6.0 %	Payments to members of the family . . . . .	5.2 %

The deposits, made up of members' savings, are quite inconsiderable in amount in consequence of the agricultural crisis and the resultant impoverishment of the country side. At the end of 1930 the total was 35,560,000 zlotys for the 2,739 banks to which the statistics refer and the number of deposits was 225,000. The average deposit was 158 zlotys and for every 1,000 zlotys lent there were deposits amounting to 286 zlotys. Hence the Stefczyk banks were dependent for the most part on capital provided by other institutions, of which the chief creditors were the State Agricultural Bank and the Central Bank of the Agricultural Co-operative Societies (*Centralna Kasa Spółek Rolniczych*). The number of banks holding deposits in excess of 50,000 zlotys represented 5.6 per cent. of the total, while in 22 per cent. of the banks the number of deposits was not above 1,000.

At the present time Poland ranks among the countries in which credit is excessively costly and this state of affairs reacts very unfavourably on the Stefczyk banks, obliging them to charge an interest of 8 to 11 per cent. on the loans granted, while on the other hand they pay a very high rate of interest (4 to 11 per cent.) on savings deposits.

The difference between the rate of interest paid for deposits and that received for loans is very marked and is due to the small size of the co-operative societies and to the small amount of the individual loans granted, administration expenses being thus rendered unduly high. In 1932 the cost of administration was on the average equivalent to 3.91 per cent. of the sums lent, a figure which rose in the Warsaw Union to 4.69 per cent. while in the Cieszyn Union alone was it less than 2 per cent. the precise figure being 1.97 per cent. As the banks increase in importance there is a tendency for the administrative expenses to diminish in proportion to the amounts of the loans.

(c) *Co-operative Loan and Savings Societies of the Popular Bank Type.* — Before the reconstitution of Poland important credit institutions, organized to some extent on the lines of the Schulze-Delitzsch banks, had been working more or less successfully throughout the country. In the territory formerly under Prussian rule they were known as popular banks and their beginnings date back some 70 years.

Almost all these societies belong to the Credit Unions which are members of the Union of Polish Co-operative Societies and, as will be seen from Table IV, at the end of 1930 their total number was 752 and of these 249 belonged to the Poznan Union, 324 to the Warsaw Union and 179 to the Union of Lwów. A large proportion of the co-operative societies attached to the Warsaw and Lwów Unions very closely resembled the Stefczyk banks described above. They are however for the most part large scale institutions employing as a rule their own capital only and the members' shares and reserve funds are of considerable importance. A distinguishing feature is their tendency to become institutions with unlimited liability and thus, as already stated, they differ from the typical Schulze-Delitzsch Banks. In 1929, out of 727 Banks, 342 had unlimited liability, proving that the members repose great confidence in their stability. The societies are under expert management and hence their staff is in receipt of salaries as in ordinary banks.

In 1929 the total of the capital of 727 of these institutions amounted to 39,265,000 zlotys and the reserve and other owned funds to 17,907,000 zlotys. The total of the deposits during the year was 135,916,000 zlotys and of the sums placed to current account 11,265,000 zlotys.

The loans guaranteed by bills of exchange were for a total of 203,612,000 zlotys and of all other loans 53,938,000 zlotys while the volume of business transacted amounted to 307,047,000 zlotys. The average financial position of the banks is shown by the following table :

Owned capital . . . . .	84,266 zlotys	
Deposits . . . . .	202,450	»
Sums due . . . . .	122,907	»
Other liabilities . . . . .	12,723	»
Total liabilities . . . . .	422,348	»
Cash in hand . . . . .	10,572	»
Bank buildings and rent . . . . .	16,447	»
Loans . . . . .	354,264	»
Real and other property . . . . .	23,129	»
Other assets . . . . .	17,447	»
Balance loss . . . . .	488	»

At the end of 1929 the total number of members was 531,986, distributed over 727 societies, of whom 58 per cent. were agriculturists. Of the latter 269,510 owned farms with an area of less than 20 hectares and 37,650 owned larger farms. It will be seen that a clear majority of the members are agriculturists and hence the societies are here called agricultural banks and treated as institutions properly coming within the scope of a report on agricultural co-operation. It is at the same time quite true that they provide for the requirements of all classes, especially of the lower middle class, but their activities are closely connected with the country side and the farms.

The work of these societies in the field of credit mainly consists in the grant of short term loans on bills of exchange, partly guaranteed by securities, and in

the opening of members' current accounts; 83.9 per cent. of the balance sheet total in 1929 represented outstanding loans of these types. The credit banks might properly use part of their capital for long term credit, as on this date their deposits represented 47.9 per cent. of the available capital, but this course was not followed as it was desired to maintain their normal policy of granting short term credit only and thus to ensure the constant fluidity of their assets. A considerable sum in ready money is always retained and their bills of exchange make it easy to have capital sums available at short notice by rediscounting. In 1929 bills not rediscounted and cash in hand were equal to 92.2 per cent. of their liabilities including deposits, current accounts and sums due to other banks.

(d) *The Central Banks of the Co-operative Societies.* — The requirements of the agricultural co-operative societies are fulfilled by a number of central banks of which the most important are the Central Bank of Agricultural Co-operative Societies (*Centralna Kasa Spolek Rolniczych*) at Warsaw and the Bank of the Union of Co-operative Societies at Poznan.

The Central Bank was founded at Lwów in 1907. In 1917 it was reorganised and transferred to Warsaw. It may be described partly as a co-operative and partly as a governmental institution and its membership is made up of the various co-operative societies which are shareholders. The number of such societies at the end of 1930 was 3,716 and of these 3,083 were distributed among the following groups:—

Credit banks . . . . .	2,611
Agricultural and trading societies . . . . .	153
Co-operative dairies . . . . .	285
Other societies . . . . .	34

During the same period the paid-up share capital amounted to 4,664,000 zlotys, of which 363,000 zlotys were paid by the State and the remainder by the various co-operative societies. Other funds totalled 71,285,000 zlotys and the value of the deposits of the various co-operative societies was barely 4,379,000 zlotys. The Central Bank has been unable as a result of the crisis directly to assist the societies and it has been mainly engaged in trying to obtain State loans and to distribute them among the member societies.

This Bank carries out its operations throughout the Polish Republic and its members for the most part belong to the Confederation of the Unions of Agricultural Co-operative Societies. The headquarters of the Bank are at Warsaw and it has 6 branches.

The Bank of the Union of Polish Cooperative Societies is organized as a joint-stock company. It was founded at Poznan in 1886 and its capital, which was quite small at the outset, has increased rapidly. The majority of the shares were then held by the popular banks. After the war the situation was somewhat changed as a great many of the shares had passed into the hands of private persons; the preference shares, however, are still held to-day by the popular banks and the

Bank itself has retained its character as a central body for financing the co-operative movement.

In 1929 the balance sheet showed a total of 281,000,000 zlotys. Owned capital amounted to about 23,000,000 zlotys and deposits to 140,000,000 zlotys. The Bank assists the various co-operative credit banks within the limits of its powers by discounting their bills and by providing in certain cases different kinds of loans. Its sphere of operations lies almost entirely among the co-operative societies belonging to the Union of Polish Co-operative Societies.

## VI. — CO-OPERATIVE ORGANISATION OF CONSUMERS' SOCIETIES.

(a) *The Beginning of the Movement.* — As in a large number of cases in other countries the beginning of the movement for organising consumers' societies took the form of the group purchase of requisites. The element characteristic of Polish efforts in this field in the territory that formerly, belonged to Austria, and to some degree also in the former Russian territory, is to be found in the tendency of the local agricultural societies known locally as Agricultural Clubs (*Kolka rolnicze*) to open small shops of their own in addition to arranging joint purchases. These were not as yet developed as agricultural trading societies or organisations and were chiefly concerned with the provision of various requisites for farm households and in part for the farms themselves. Thus the shops in question closely resembled small co-operative stores, stocking provisions, etc. The movement may be said to have had its beginnings in Galicia in 1882.

In 1891 the Union of Agricultural Trading Associations of Kracow (*Związek Handlowych Kolek Rolniczych*) was instituted. This was a co-operative organisation, serving as a wholesale supply store for the local societies. District stores were established twenty years later which acted as wholesale supply stores for the various trading associations.

A sound system of trading associations requires organisation on a much larger scale than that of the societies in the former Galician territory. Thus it was impossible to develop the stores of the farmers' clubs into genuine co-operative agricultural trading societies. Only the Ukrainians in Eastern Galicia made any serious efforts in this direction and, as shown by Table IV, they possessed, at the date to which the figures refer, 2,547 trading societies. These however are in reality nothing more than small consumers' co-operatives solely for the supply of a limited range of products required by agriculturists for purposes of the household or of the farm.

The Polish element in the population of the former Galicia organised its selling associations on a large scale and of these a description will be given later.

In other parts of Poland members of the associations carried out joint purchases, and in the former Prussian area the German Raiffeisen credit banks frequently combined their normal activities with trading, which in some instances was more highly developed than their credit operations.

(b) *The Agricultural Syndicates and the "Rolniki".* -- In the former Russian territory, as early as the end of the XIXth Century, large co-operative organ-

isations were established for the supply of the requisites of farms and farmers. The members of these bodies were for the most part recruited among the owners of the larger farms in which they had invested considerable capital sums. The area covered by the operations of the various syndicates was generally quite large and usually about 12,000 sq. km. The establishments themselves took the form of large commercial undertakings, under experienced management, for the supply of agricultural machines and equipment, seeds, cake, artificial manures, etc. On occasions the syndicates bought from their members a certain amount of cereal and other seeds of their own production.

Two syndicates of this type were also formed in the former Austrian area.

Since 1900 the Polish inhabitants of the former Prussian territory also took steps to form agricultural trading associations to which the name of "*Rolniki*," was given. The first of these was founded in 1900 and ten years later there were already 61 such bodies at work. They are smaller than the agricultural syndicates in the former Russian territory but they are organised on a basis of a substantial share capital contribution by members and of management by salaried experts. A characteristic feature is the high importance attributed to the purchase of farm products, including cereal and other seeds and a certain quantity of potatoes, partly from their members and partly from other farmers not belonging to the society. In addition the *Rolniki* provide both members and non-members with other farm requisites such as artificial manures, cake, seeds, coal, etc., but they do not undertake the sale of agricultural equipment and machinery.

(c) *Co-operative Societies founded during the War Period.* — The war largely disorganised the co-operative movement on its agricultural and commercial side.

The establishment of small agricultural trading co-operative societies was greatly stimulated at the end of the war (1918-21). Poland had at that time introduced a system of rationing for a large number of essential products such as flour, sugar, coal, etc., and it was easier for the co-operative societies than for the ordinary commercial establishments to obtain supplies. At the same time consumers who were members of the co-operative societies could be sure of obtaining without difficulty any particular product they required. Thus a number of small societies were instituted which in normal times would have had no chance of successful development and those in the country were classed as agricultural trading associations.

Changed conditions caused certain of these associations to combine and to form themselves into important organisations; others were wound up, while others again carried on a precarious existence. Before the war the agricultural syndicates and the *Rolniki* were but little interested in the provision of household necessities, whereas the agricultural trading associations founded after the war pay special attention to this line of business, becoming rather co-operative consumers' societies than agricultural trading associations.

The application of the law on co-operative societies also had its effect in transforming to some extent the co-operative movement. Thus the agricultural syn-

dicates in the former Russian territory gave up their co-operative character and converted themselves into joint stock companies. Experience however showed that this new form of organisation was unsuitable and they returned once more to the co-operative form of organisation.

The severe crisis from which Polish agriculture has now been suffering for over two years, has seriously affected all institutions which work in close connection with the agricultural classes with the idea of supplying the requirements of their farms. The turnover of the agricultural societies has been greatly reduced and most of them are in serious difficulties owing to the inability of their clients to meet their bills.

(d) *The General Agricultural Trading Associations of to-day.* — Reference has been made above to the Agricultural Associations and to the *Rolniki* which have been considered as types of regular co-operative trading associations of the prewar period. Most of these institutions are still in being and in addition many new societies have been founded, but a considerable number have been severely affected by the financial crisis which has lasted for upwards of two years, and are now in process of liquidation.

At the end of 1929 the number of *Rolniki* was 89 with a membership of 15,275 persons holding shares amounting in each case to sums varying from 100 to 600 zlotys. These are societies with limited liability, each member being liable for a sum equivalent to five times his actual share holding. The aggregate turnover of the *Rolniki* amounted to 13.2 million zlotys in 1924 and the aggregate balance sheet total was 10.8 million zlotys. In 1929 the turnover was 169.3 million zlotys and the balance sheet total 58.8 million zlotys. In the same year 753,000 tons of goods were sold.

The central trading body of the *Rolniki* is the Central Establishment at Poznan, which was actually founded in 1906 but only received its title in 1918. This is a joint stock company with a large owned capital and a turnover which in 1929 amounted to 87 million zlotys. There is also at Poznan a Central Machine Depot (*Zwiazkowa Centrala Maszyn*) which is also a joint stock company but is conducted on the lines of a co-operative society working for the benefit of the farming class.

The *Rolniki* and their Central Establishment are holding their own fairly successfully against the prevailing financial crisis.

The agricultural syndicates are affiliated to a central body known as the "*Kooprolna*" (Agricultural Co-operation). They are at the present time in serious difficulties and it would not be easy at this juncture to give any detailed account of their work.

The agricultural trading associations, now for a long period under the management of the audit unions, form a group apart, belonging to the Confederation of the Agricultural Co-operative Societies of the Polish Republic.

At the end of 1930 these associations numbered 157 and are most numerous in the provinces of Kracow (23), Lwów (20), Lublin (19), Bialystock (14) Kielce, etc. The total number of members is 53,213, and they are organised on lines similar to those of the *Rolniki*, save that, in addition to supplying

farm requisites, they are also purveyors of commodities essential for farm households.

The number of members, as in the case of the *Rolniki*, is not high and, as a result, owing to the relative smallness of the owned capital, these institutions are often converted into organisations more closely resembling private business undertakings than co-operative societies.

These associations possess a number of central trading organisations, mostly taking the form of central co-operative societies. In common with their members, these central bodies are at present suffering very severely from the crisis.

The Union of Polish Co-operative Societies includes also among its members a considerable number of agricultural trading associations in the central provinces and also district depots and depots belonging to farmers' clubs in the provinces in the south. In 1929 depots and warehouses to the number of 97 were registered as co-operative societies and were attached to two central trading bodies with headquarters at Warsaw and at Kracow respectively.

(e) *Consumers' Co-operative Societies in Rural Districts.* — The object of these societies is to provide for the requirements of farm households and also in part of the farms themselves. It was stated on an earlier page that 2,547 Ukrainian Co-operative Societies, attached to the Audit Union of the Ukrainian Co-operative Societies of Lwów, were organised on these lines.

They have a central financial organisation and two central trading bodies. Although so numerous, these societies are by means strong and the individual turnover is on a small scale.

The consumers' rural co-operative societies attached to the Union of Consumers' Co-operative Societies of the Polish Republic, with headquarters at Warsaw, (*Zurazecz Spółdzielni Spożyców Rzeczypospolitej*), are of an independent character. They are ordinary consumers' societies, which at the same time provide the farms with artificial fertilisers and with feeding-stuffs and buy their wheat and other products.

(f) *Co-operative Societies for the sale of Slaughter Cattle.* — These societies made satisfactory progress in the area of the former pre-war Galicia, and steps were taken to establish district societies, which were engaged in selling pigs on commission and also a certain number of cattle in Vienna and Prague.

The post war period was characterised by continual changes in arrangements for marketing animal products. At certain periods a higher rate of profit was to be made by the export of live cattle to foreign countries, at others by the sale of hams and bacon. In these conditions the normal development of the co-operative societies for marketing slaughter cattle was checked. At the present time there remain a few dozen societies of this type, mostly engaged in selling animals on commission.

The egg-selling societies form a group apart and will be discussed in the next chapter as they are always associated with the dairy societies.



## VII. CO-OPERATIVE DAIRIES.

(a) *General Remarks.* — The establishment of the co-operative dairies in Poland dates from the end of the XIXth and the beginning of the XXth centuries. Before the war they were fairly successful in the form of small co-operative societies, receiving their milk supplies from their members in the locality. The war seriously interfered with their activities but could not destroy them altogether. The movement is gradually gaining strength again and is coming to play an increasingly important part in the economic life of rural Poland.

The dairy societies have suffered less from the crisis than the agricultural trading societies and the savings and loan banks. The explanation lies in the fact that the societies sell members' milk on commission, have no owned capital, do not use bills of exchange and do not have recourse to other kinds of credit and hence do not make bad debts in consequence of the insolvency of their debtors. They are thus in a position to carry on business even in the most unfavourable conditions.

Table IV shows that there were 1,420 dairy societies belonging to central organisations at the end of 1930, of which 948 were attached to the Unions, which were members of the Confederation of the Unions of Agricultural Co-operative Societies of the Republic of Poland and 187 were members of the Union of Polish Co-operative Societies, while 162 were Ukrainian and 123 German Societies.

As a rule these societies are on a quite small scale and only the co-operative dairies in the Western provinces are slightly larger while some of the largest of all are to be found scattered among the eastern and central provinces. In almost all the Polish co-operative dairies manual labour is used for driving the machines and in this respect they differ from the co-operative dairies in other European countries, where mechanically driven motors are employed.

The work of a dairy is bound to be on a limited scale if it has no branches, for the milk must be provided daily. As will be seen from the following table, half the dairies to which the 1930 statistics refer and members of the Confederation of the Unions of Agricultural Co-operative Societies, 897 in all, have no branch organisation :

Dairies having no branches . . . . .	444
"        "        one branch . . . . .	129
"        "        two branches . . . . .	116
"        "        three branches . . . . .	65
"        "        from 4 to 10 branches . . . . .	126
"        "        more than 10 branches . . . . .	17

(b) *Dairy Societies belonging to the Confederation of the Unions of Agricultural Co-operative Societies.* — Among the 947 dairies belonging to the above mentioned Confederation in 1930, there were 173 in the province of Warsaw, 133 in the provinces of Lublin, 115 in the province of Lwów, 98 in the province of Krakow, etc. The area of operations of a society of this type covered 379 square kilometres and 3,253 farms. About 6.4 per cent. of the farms belonged to the co-operative

societies of the Confederation but this figure varies greatly in the different provinces. Thirty-four farms on an area of 140 square kilometres supply a given collecting station.

The total number of agriculturists belonging to the Confederation dairies was 193,000. The majority were owners of small farms having an area of less than 20 hectares and 5,600 farmed upwards of 20 hectares.

A set of specially compiled statistics showed that 892 co-operative societies had a total membership of 203,000 persons (including non-agriculturist members) owning 380,000 cows; thus each society had on the average 225 members owning 426 cows.

Hence it will be seen that the co-operative dairies belonging to this group have a membership consisting mainly of small farmers and that the number of cows per member is less than two.

The majority of the dairies, 833 in number, used their milk for butter-making and there were in addition 86 creameries, 2 cheese factories, while 25 others sold fresh milk.

The co-operative dairy societies have a tendency to form themselves into larger bodies and many of them have already been re-organised with this end in view through a combination of neighbouring dairies. Notwithstanding this tendency however, the number of dairies belonging to the Confederation has increased rapidly from year to year. Whereas the number was 166 in 1924, by 1930 it had already risen to 946. Similarly the number of cows registered rose from 81,500 in 1925 to 380,000 in 1930 and the amount of milk supplied from 30 million litres in 1925 to 320 million litres in 1930. The aggregate balance sheet total was 685,000 zlotys in 1924 and 19,000,000 zlotys in 1930 and the amounts paid for milk supplied were 4,957,000 zlotys and 51,289,000 zlotys respectively.

These societies have two central trading bodies, one at Warsaw and the other at Kracow. Both are in the nature of co-operative central bodies and are chiefly engaged in the wholesale marketing of butter, cheese, eggs and a limited amount of milk and they carry on a considerable export trade. Thus the central trading body at Warsaw in 1930 handled 3,383,000 kg. of butter of which 1,065,000 kg. were exported to other countries. The Central trading body at Kracow handled 2,157,000 kg., of which 885,000 kg. were exported

(c) *Co-operative Dairy Societies belonging to the Union of Polish Co-operative Societies. The German and Ukrainian Co-operative Dairies.* — The characteristic feature of the Polish co-operative movement in the area that was formerly Prussian in the prewar period was that in general only the Popular Banks and the "Rolniki" described in previous pages were established. The district also had no Polish co-operative dairies. These only came into being after the war and are now to be found in limited numbers in the provinces of Poznan and Pomerania. They are considerably larger than those in the central provinces. In 1930 there were 51 of these societies affiliated to the Union, whereas in 1929 their number was 43, though the quantity of milk supplied was large, amounting to a total of 72,536,000 kg. with an average of 1,687,000 kg. for each dairy.

As already stated, the amount of milk furnished to the co-operative societies which were members of the Confederation was much lower.

The Finance Union of the Co-operative Dairy Societies at Poznan (*Związek Gospodarczy Spółdzielni Mleczarskich*), which dates from 1927, serves as the central organisation of these dairies. In 1929 its trade in butter amounted to 2,564,000 kg. of which a large proportion was for exportation.

Co-operative dairies, 136 in number, with membership in the Union of Polish Co-operative Societies at Warsaw and similar in character to those of the Confederation, were also in 1930 members of the Federation of the Unions of Polish Co-operative Societies.

The German co-operative dairies were organized some time before the war in the former Prussian territory and were fairly successful. They are however on a smaller scale than the societies in the same area which belong to the Union of Polish Cooperative Societies.

The Ukrainiar dairy societies are of no great importance.

(d) *Egg-collecting Depots.* — Egg-collecting depots are chiefly to be found at the co-operative dairies and there is in Poland only a small number of special societies for the sale of eggs. There were, however, 146 egg-collecting depots belonging to the societies attached to the Confederation in the former Russian territory. Several of them collected less than 10,000 eggs and the majority from 10,000 to 100,000, while 13 depots in 1930 obtained over 100,000 eggs apiece.

Poultry breeding in Poland has not as yet been seriously developed and the organisation of egg selling leaves much to be desired. The first steps however have been already taken and as the dairy societies, which are interested in the collection and sale of eggs, are fairly numerous and distributed throughout Poland, they may be able to serve a very useful purpose in this connection.

The central trading bodies of the co-operative dairies at Warsaw and Kracow, already mentioned, are engaged in the wholesale trade and in 1930 sold 7,852 cases, each holding 1,440 eggs.

## VIII. — MISCELLANEOUS AGRICULTURAL CO-OPERATIVE SOCIETIES

There are also to be found in Poland a number of co-operative societies which do not come under any of the categories discussed above, but they are not particularly numerous. The Union of Agricultural Co-operative Societies of Warsaw (*Warszawski Związek Spółdzielni Rolniczych*) includes among its members a few market gardeners' and gardeners' and beekeepers' societies, one society for the sale of the products of rural industries, four co-operative mills and bakeries, 3 fruit-growers' societies, a certain number of societies for building workmen's dwellings and of rural house building societies together with four flax-growers' societies. The last-named are all to be found in North Poland in the flax growing area and their principal function is to assist their members in separating the seed or otherwise treating their flax and sometimes they undertake to carry out sales on behalf of members.

The societies connected with building which have been mentioned usually assist their members in purchasing building materials, and therefore are often quite short-lived.

Similar societies, with the exception of the flax-growers', are also to be found in other parts of Poland but in no large numbers. In Pomerania there are three co-operative rural distilleries and two electric power supply societies ; seven power supply societies have also been established in Silesia.

Prof. Z. LUDKIEWICZ.

## INSURANCE

### Hail Insurance in Hungary.

In 1931 the following societies were dealing with hail insurance in Hungary:

Első Magyar Általános Biztosító társaság (First Hungarian).

Foncière Általános Biztosító-intézet (Foncière).

Hazai Általános Biztosító-Részvénytársaság (National).

Magyar Francia Biztosító-Részvénytársaság (Franco-Hungarian).

Magyar-Hollandi Biztosító-Részvénytársaság (Dutch-Hungarian).

Magyar Jég-es Viszontbiztosító - Részvénytársaság (Hungarian Hail insurance).

Penzüntézetek (Association of Financing Institutes).

Turul Magyar Országos Biztosító r. t. (Turul)

Donau Allgemeine Versicherungs-Aktiengesellschaft, Vienna

Phönix Allgemeine Versicherungs-Aktiengesellschaft, Vienna.

Riunione Adriatica di Sicurtà, Trieste.

Royal Exchange Assurance Corporation, London

Sun Insurance Office Ltd, London.

Első Keresztény Biztosító Intézet r. t. (First Christian).

Gazdák-Biztosító-Szövetkezete (Farmers' Insurance Association).

Pátria Általános Biztosító Részvénytársaság (Patria).

The "Der Anker," company which during 1930 also undertook hail insurance has suspended activities in this branch.

The first 13 companies, including eight Hungarian and five foreign, form an insurance Pool regulated by the new agreement entered into between the companies, which came into force on August 1931 (1). The object of this agreement is the diminution of insurance risks by means of suitable distribution of risk and to ensure, by organising the valuation of damages by joint bodies, the equitable and effective settlement of claims in respect of damage by hail. It is considered by the companies forming this Pool that they can offer to farmers the opportunity of taking out insurance against hail on the most advantageous terms possible and that at the same time the interests of the companies thus grouped are protected

(1) The information as regards the Pool, has been kindly communicated by the First Hungarian Company.

by the agreement. The signatory companies have, in accordance with the objects referred to, undertaken to keep statistics in common, and on this basis to agree on principles, rates of premium and conditions and at the same time to observe with strictness the provisions of the agreement, and to avoid everything contrary to the letter or spirit of the agreement in question, or in other words to the common interests of the members of the Pool.

An account will now be given of certain provisions of interest relating in particular to the taking out of insurance policies, to the work of the companies forming the Pool, to the adjustment of losses (*Schadenausgleich*), to the relations of the associated companies with companies not participating in the agreement, to the administrative bodies of the Pool, and finally to the contractual consequences of any failure to observe the agreement.

The companies forming the Pool are bound to effect hail insurance: (a) only on the basis of the general conditions agreed between themselves; (b) without at any time fixing premiums and additional charges at lower figures than the rates agreed and only in accordance with the provisions relating to these rates; (c) only with strict observance of any other provisions jointly agreed on for the effecting of hail insurance (e. g. provisions relating to maximum prices, the period that may be fixed for acceptance of the policy, the exclusion of certain crops from insurance); (d) utilising exclusively the schedules jointly agreed on relating to insurance proposals as well as any such schedules the use of which has been contemplated at the time of the effecting of the hail insurance contracts.

The general conditions of insurance cannot be altered except by a decision of the managing bodies of the confederated companies, taken after consulting the Rates Committee. The Schedules of rates agreed upon can be altered only under the same conditions

The maximum prices up to which, in accordance with the general conditions, the different crops may be insured must be fixed by a decision of the associated companies. The same holds good as regards the period fixed for the acceptance of the policy, and the exclusion of certain crops.

Exceptions to the rules included in the schedules of rates agreed upon are admissible provided the consent of the associated companies is obtained.

Losses for which the associated companies are liable must be at once notified to the Office of the Pool. The associated companies must take no part in the determination or estimation of damages. The joint Office for such estimation and for determination of the amount of compensation payments undertakes these duties in the name of the company or companies concerned. Payments or refusals to pay are made directly by the company concerned in accordance with the decision of the Office. The companies have no power to make compensation payments to claimants that are either higher or lower than the amounts fixed by the Office, nor have they power to compensate if the Office has considered that there is no claim for compensation.

Every year making any settlement of claims the Office has to submit to the associated companies a list of the claims pending with a brief note on the state of affairs in each case.

Associated companies are not allowed to give their principal agents commissions amounting to more than 10 per cent. of the net premium and local agents more than 7 per cent. of the net premium. Apart from this commission no other bonus is given.

The system of adjusting the payment of claims between the different companies may be described as a partial pooling of the losses and is, in fact, equivalent to a form of re-insurance. The associated companies enter into an undertaking to participate in this adjustment within the limit of 50 per cent. of the hail insurance business done by each of them. The adjustment is made when in the course of a particular year the amount of the claims paid by any one or more of the associated companies (including the share of the cost of estimating the damage) exceeds 70 per cent. of the net premiums received (not including additional charges), this limit of 70 per cent. being fixed by the pooling agreement. In calculating the adjustment to be made, the basis of calculation is the premium which is in accordance with the insurance contract, even in the case of policies in which the premiums are lower than those set out in the scale of premiums fixed by the pooling agreement, as for example when an exceptional scale has been adopted with the consent of the other companies..

Some further details in regard to the system of adjustment will serve to elucidate the above statement.

If, in the course of a particular year, a company has to pay, or several companies have to pay, claims beyond the limit fixed by the pooling agreement (that is, greater than 70 per cent. of the net premiums), each such company will be paid the amount by which 50 per cent. of the claims paid by it (including 50 per cent. of the costs of estimating the damage) exceeds the limit fixed by the Pool agreement. The total amount of this payment will be borne by the companies which have paid claims not reaching the limit fixed by the Pool agreement, and the share of each company in such payment will be proportionate to the difference between the limit fixed by the Pool agreement and the claims actually paid (including the costs of estimating the damage).

If, in the course of a particular year, the hail insurance companies, taken as a whole, pay claims exceeding the limit fixed by the Pool agreement, the adjustment will be made on the basis of the average percentage relation between the claims paid and the total business of the companies. This percentage is arrived at by comparing the net premiums (additional charges not included) on the one hand and the claims paid (including the costs of estimating the damage) on the other hand. In making the adjustment on the basis of the average percentage, the companies which have paid claims below the average percentage are expected to pay over to the other companies the amount by which 50 per cent. of the claims actually paid by them (including 50 per cent. of the costs of estimating the damage) falls short of the sum to which these would have amounted if the percentage relation between the claims paid and the net premiums had been the average percentage. The sums so paid over are distributed amongst the companies which paid claims exceeding the average percentage in such a way that each of them receives the amount by which 50 per cent. of the claims actually paid by them (including 50 per cent. of the costs of estim-

ating the damage) exceeds the sum to which these would have amounted if the percentage relation between the claims paid and the net premiums had been the average percentage.

The calculations required for the adjustment are made by the joint Bureau the functions of which also include : supervision of the precise observance of the contractual provisions in hail-insurance, valuation of damage to crops affecting associated companies, establishment of statistics of hail-insurance in the territories which are insurance areas for associated companies. The calculations in question must be made in the first instance without reckoning claims pending. As each of these is settled the adjustment of the payment of claims relating to the year in the course of which the damage in question occurred will be revised by reckoning that damage, unless some other procedure is decided upon by the managing bodies of the associated companies by a three-fourths majority. If a premium, which has been already calculated in the determination of the adjustment of a given year, is cancelled in the course of a successive year, the provisions relating to the subsequent readjustment as stated above will be applicable by simple analogy.

Decisions on matters relating to the Pool are reserved to the managing bodies of the associated companies except for some decisions which are especially entrusted to the Conference of Representatives. Every decision on the part of the managing bodies of the companies is taken either at a Conference of managers or by means of a written vote. Every managers' meeting is empowered to take a decision if at least three fourths of the associated companies are validly represented and if the president shows that proper summons have been sent to the companies not represented. If nothing has been arranged to the contrary in the pooling agreement, all decision is by unanimous vote of the companies represented. Any abstention from voting is considered as a positive vote. Any vote conditioned or given under reserve counts as a negative vote. If a majority vote is provided for in the pooling agreement, this majority must be calculated on the number of companies represented.

Managers' meetings are held as a rule twice a year, one in the spring and one in the autumn. Extraordinary meetings are called if at least three associated companies make a written request to that effect.

Conferences of representatives, consisting of officials with powers conferred by the companies to which they belong, are held as required. These are called on the decision of the directing company or on the request of at least two associated companies. All decisions passed either in a managers' meeting or by means of written vote or even by a meeting of representatives are binding for all the companies and from the legal standpoint must have the same force as the provisions of the agreement itself.

As regards the relations of the associated companies with the non-associated companies, the former are bound not to undertake re-insurance for the latter within the areas for hail insurance under the Pool, nor to take over any risks assumed by them. Similarly the non-associated companies have no power to reinsure the risks of the associated companies. In the insurance areas of the Pool, joint insurance with non-associated companies (either by collective policies, or

by independent documents) can only be effected if it is agreed by a three fourths majority of the associated companies.

The pooling agreement provides for sanctions applicable to a company or a body representing it which by its action or by failure to act violates the provisions of the agreement or fails to comply with them or acts contrary to the spirit and the letter of the agreement, or in other words acts counter to the common interest of the associated companies. In this case the company in default is obliged to repair the wrong done and to compensate any company which has suffered loss. Such compensation may not exceed 15,000 pengös. In addition a money fine is charged the amount of which is fixed by the agreement. This fine is remitted only in the event of the *bona fides* of the company in default having been proved.

In order to guarantee the payments of all the charges arising out of membership of the Pool, each associated company must deposit a guarantee of 8,000 pengös. A special fund for this purpose exists at the National Hungarian Bank at Budapest.

Among the companies not forming part of the Pool, the most important is the Farmers' Co-operative Insurance Society (*Gazdak*) which was founded in 1899. At that time the position was that farmers, particularly in respect of hail and fire insurance, had no choice but to insure themselves with insurance companies which had formed a ring amongst themselves. These organisations, after the great hailstorms of 1897 and 1898, had by a stroke of the pen increased hail insurance premiums by 100 per cent. It was largely so as to free themselves from this dependence that the farmers founded an Insurance Institute in the form of a co-operative society. The post-war financial disorder forced the society to make a temporary agreement with the large insurance companies and to link itself with these with a view to protection of interests and the fixing of the level of insurance premiums. With the stabilisation of the currency in Hungary in 1927 the co-operative society severed its connection with the insurance companies.

This co-operative society received no grant or subsidy from the State and the shares held by the State amounted to a sum of 1,238,400 pengös only. Among the members of the managing body were delegates of the Ministry of Agriculture, the National Chamber of Agriculture and the National Society of Hungarian Agriculture. At the beginning this society undertook fire and hail insurance business only but several years ago it extended operations to other branches, including life and accident insurance, live stock insurance, etc.

The following are some figures relating to this society. At the end of the first financial year, that of 1901, the share capital of the society was 1,668,080 crowns; at the end of the year 1925 as the consequence of the depreciation of the currency it amounted only to 3,315,120 paper crowns; in 1927 it was 1,546,000 pengös, and in 1930, 1,546,000 pengös. At the end of the first year the reserves were 37,621 crowns while in 1927 they amounted to 2,125,408 pengös and in 1930 to 3,633,000 pengös. In 1901 the number of insured persons rose to 8,000 while at the end of 1928 the co-operative society had a membership of 200,000 insured persons.



Insurance societies are regulated under Law VIII of 1923 (1).

Before the war there was very little legislative regulation in this respect. Under the commercial law it was prescribed that insurance societies must show, for each branch of insurance that it was desired to undertake, actual payments of 200,000 gold crowns as guarantee. Apart from these deposits, the formation of insurance societies or of branches of foreign companies was left free, as was also the activity of the societies. The system of concessions was regulated by the Law of 1923. Concessions are made in respect of the foundation of new insurance societies, the establishment of branches by foreign companies, and even of the changes in the branches of business undertaken by the already existing societies.

For obtaining a concession it is essential first to bring proof of the existence of a guarantee fund of 250,000 gold crowns for each of the branches of insurance that is to be undertaken by the society in question. The Government reserved to itself the right to suspend for a certain lapse of time the grant of new concessions. In fact a Governmental Decree had prohibited up to 30 June 1932 the formation of new insurance societies, as well as the setting up of new branches by foreign companies.

By Law VIII of 1923 the supervising authorities and the Guarantee Councils were also established. The former constitute a State organisation attached to the Ministry of Finance, exercising supervision over all insurance business. Reports must be submitted to these authorities by the insurance societies in regard to their general conditions, policies, terms offered, prospectus, etc. The insurance societies are expected to invite the supervising authorities to be present at their general meetings and must submit to them their final reports and statements. The Guarantee Council consists of delegates of the Ministries, and of the insurance companies and insured persons, and constitutes the advisory body of the supervising authorities.

Law VIII of 1923 deals with the premium reserves, which must be employed in the purchase of Hungarian State bonds, of land mortgage bonds or of other securities, in making loans on pledge guaranteed by such securities, loans granted on the guarantee of the securities themselves, mortgage loans on lands or buildings up to half the value, loans on revenue-producing houses up to 10 per cent. of the premium reserves.

As regards reserves of insurance premiums against damage a large proportion of the reserves may be employed in bank deposits, whereas, in the case of life insurance, bank deposits can form only a limited proportion. Additional facilities may be granted by the supervising authorities.

Reserves of insurance premiums received in foreign currency must, in conformity with this Law, be invested or deposited in the same currency as that in which the insurance has been taken out and in values considered as sound by the supervising authorities. Foreign companies are expected to leave in Hungary the reserves of premiums on business done in that country.

(1) *L'Assurance Moderne*, 1931, p. 325.

State supervision of the insurance societies tends to become stricter (1). A Ministerial Order of 21 June 1930 contains among other provisions an important one under which the supervising authority may dissolve a national society and prevent a foreign company from continuing insurance business if these undertakings have for two years past done no insurance business or have effected only a very limited number of transactions, making a covering of risks improbable, and if for this reason it is justifiable to doubt if the engagements made with insured persons can be kept.

In accordance with a provision published in 1931 by the supervising authority (2) the insurance societies must also give in addition to the prescribed information: information on the premiums and on the additional charges, that is in regard to additional dues (handling charges, policy fees, supervision fees, stamp duty and other charges of the same kind).

In the data relating to the premiums and additional charges distinction must be made between business effected directly or indirectly, business transferred for reinsurance and business retained at the insurer's own risk, Hungarian business and foreign business, etc.

The information relating to claims and to indemnity reserves must include (a) the claims paid; (b) the indemnity reserves brought forward from the previous year; (c) the amount of claims pending brought forward from the previous year; (d) the indemnity reserves at the end of the financial year; (e) the amount of the claims paid in the course of the financial year. As in the case of the premiums, in these data distinction must be made between business effected directly or indirectly, within the country or abroad, etc.

Rules relating to the insurance contract are codified in the Commercial Code of 1875. Very important amendments and additions have however been made by a number of later measures. The object of Law X of 1927 (3), which dealt with certain questions regarding payment of the insurance premium, was to complete certain lacunae existing in the Commercial Law in respect of the general legal principle of insurance and of the limits of insurance periods; at the same time the Law extends the duration of the validity of the insurance contract.

Whereas according to the Hungarian commercial law the insurance contract against losses ceases to have validity if the premium payable at given periods is not paid when due, the Law of 1927 enacts that in such a case the contract shall not cease to be valid but that the insuring body may demand the fulfilment of the contract. As regards the insured person, he has the right to denounce the insurance contract at the end of six years, on condition of a periodical payment of the premiums; this right cannot be waived in advance. Other provisions follow relating to the duration of the contracts.

On 18 December 1928 (4) the Government published an Order the object of which was to regulate the legal position of the insurance agents, a ruling which

(1) *Zeitschrift für die gesamte Versicherungswissenschaft* 1 October, 1930, v. 108.

(2) *Die Versicherung*, 14 January 1932, p. 43.

(3) *Year-book of Foreign Legislation* 1927, p. 69.

(4) *Ungarisches wirtschaftliches Jahrbuch*, 1929, p. 284; 1930, p. 343; 1931, p. 315.

had been omitted in the section of the Commercial Code of 1875 devoted to insurance. This Order contains rules of private law and also measures of administrative law. As regards the former, they are based on the German and Austrian legislation on the insurance contract: *inter alia*, in the distinction made between intermediary agents and agents with full powers to conclude agreements.

The measures of administrative law contain detailed rules on the content of instructions to agents, impose on these the obligation of showing the instructions to the insured persons, and impose on the societies the obligation of drawing the attention of the insured person to the name and area of operations of the agent.

Very extensive powers have been conferred on the supervising authorities in regard to the punishing of agents who have transgressed the provisions of the Order. The penal power of the supervising authority goes to the length of having the right, in case of or in the event of the agent committing a breach of good manners or failing in his trust, to prohibit him from doing business for a limited period or even entirely. In pursuance of article 13 of the new Law on insurance by which the Government has the duty of regulating afresh the whole sphere of the insurance contract in a systematic codification, the Minister of Justice has had drawn up a scheme of regulation of insurance contracts.

This scheme has been submitted to the persons concerned, but although its advantages have been recognised, the opinion has been expressed that present day economic conditions are not favourable for the introduction of a reform of such extensive scope. In a report drawn up in three languages, the National Union of Insurance Institutions (BIOS; *Landesverband der Versicherungsanstalten*) some prominence is given to the idea of an international unification of the legislation relating to the insurance contract. The Economic Committee of the League of Nations has deputed the study of the question to the International Institute of Private Law at Rome. At the same time the proposals made by the National Union of Insurance Institutions have evoked considerable interest on the part of the International Law Association, and a Committee of this Association has been formed for the purpose of studying the law of insurance and the question of unification of the law of insurance has been placed upon the agenda of the next Congress of this Association.

At their general meetings of 23 March 1932 the associated companies resolved on the introduction of the non-liability clause (1).

After two years of heavy losses (1924-25) the increase of premiums had been already resolved upon, as well as the introduction of complete non-liability up to 5 per cent., a measure which did much to improve the position by the suppression of compensation payments for trifling damage and by effecting economies in the costs of estimating damage. The insurance companies were, however forced by more recent experiences to go further and to introduce a new schedule of rates including both higher premium rates and at the same time an extension of non-liability. In the case of insurances effected under the new

(1) The following statement is based mainly on an article by M. Lengyel: Die Einführung der Abzugsfranchise im ungarischen Hagelgeschäft. *Die Versicherung*, No. 13 Wien, 31. März 1930.

schedule, the following alternatives are open: (a) if the new higher rates of premiums are applied, full compensation of losses may be paid; (b) if the premiums are subject to 10 per cent. reduction, then compensation is not given for losses below 5 per cent.; (c) if a 20 per cent. reduction of premiums has been arranged, then the non-liability applies to damage below 5 per cent; (d) for a 30 per cent. reduction of premiums, a non-liability for damage below 8 per cent.

The Office of the Pool dealing with estimation of damages has tabulated very important figures, relating to the effect of non-liability in the course of 1928, 1929, 1930 and 1931. For these four years damages have been grouped according to the percentages of damages.

The following are the tables referred to:—

Percentage of damages	Mean percentage of damages	Total	Reduction in the case of non-liability			
			of 5 %		of 8 %	
FINANCIAL YEAR 1928.						
Gross Premiums : pengös 6,062,093						
up to 5 %		304,286	of 1/1	304,286	of 1/1	304,286
6- 10 %	8	516,253	» 5/8	322,658	» 1/1	516,253
11- 20 %	15	400,901	» 5/15	163,654	» 8/15	261,848
21- 30 %	25	276,585	» 5/25	55,317	» 8/25	88,504
31- 40 %	35	193,469	» 5/35	27,638	» 8/35	44,201
41- 50 %	45	160,965	» 5/45	17,885	» 8/45	28,616
51- 100 %	80	1,150,268	» 5/80	71,892	» 8/80	115,027
		<hr/>		<hr/>		<hr/>
		3,092,787		963,330		1,358,735
		<hr/>		<hr/>		<hr/>

#### FINANCIAL YEAR 1929.

*Gross Premiums: 4,889,045 pengös*

up to 5 % . . . . .		272,334	of $\frac{1}{1}$	272,334	of $\frac{1}{1}$	272,334
6- 10 % . . . . .	8	531,762	» $\frac{5}{8}$	322,350	» $\frac{1}{1}$	531,762
11- 20 % . . . . .	15	413,640	» $\frac{5}{15}$	137,880	» $\frac{8}{15}$	220,608
21- 30 % . . . . .	25	206,273	» $\frac{5}{25}$	41,254	» $\frac{8}{25}$	66,008
31- 40 % . . . . .	35	167,988	» $\frac{5}{35}$	23,998	» $\frac{8}{35}$	38,392
41- 50 % . . . . .	45	110,006	» $\frac{5}{45}$	13,223	» $\frac{8}{45}$	21,152
51-100 % . . . . .	80	659,978	» $\frac{5}{80}$	41,225	» $\frac{8}{80}$	65,998
		<hr/>		<hr/>		<hr/>
		2,370,981		852,264		1,216,254
		— — —		— — —		— — —

Percentage of damages	Total	Mean percentage of damages	Reduction in the case of non-liability	
			of 5 %	of 8 %

### FINANCIAL YEAR 1930.

*Gross Premiums: 4,834,875 pengös*

up to 5 % . . . . .		286,718	of $\frac{1}{1}$	286,718	of $\frac{1}{1}$	286,718
6- 10 % . . . . .	8	483,231	» $\frac{5}{8}$	302,023	» $\frac{1}{1}$	483,231
11- 20 % . . . . .	15	403,747	» $\frac{5}{15}$	134,582	» $\frac{8}{15}$	215,331
21- 30 % . . . . .	25	264,703	» $\frac{5}{25}$	52,860	» $\frac{8}{25}$	84,576
31- 40 % . . . . .	35	215,402	» $\frac{5}{35}$	30,772	» $\frac{8}{35}$	49,235
41- 50 % . . . . .	45	185,595	» $\frac{5}{45}$	20,622	» $\frac{8}{45}$	32,994
51-100 % . . . . .	80	817,566	» $\frac{5}{80}$	51,098	» $\frac{1}{80}$	81,757
		<hr/>		<hr/>		<hr/>
		2,656,568		878,675		1,233,848
		<hr/>		<hr/>		<hr/>

### FINANCIAL YEAR 1931.

*Gross Premiums: 3,674,192*

up to 5 % . . . . .		291,121	of $\frac{1}{1}$	291,121	of $\frac{1}{1}$	291,121
6- 10 % . . . . .	8	494,920	» $\frac{5}{8}$	309,325	» $\frac{1}{1}$	494,920
11- 20 % . . . . .	15	502,214	» $\frac{5}{15}$	167,415	» $\frac{8}{15}$	267,804
21- 30 % . . . . .	25	378,985	» $\frac{5}{25}$	75,799	» $\frac{8}{25}$	121,275
31- 40 % . . . . .	35	298,080	» $\frac{5}{35}$	42,584	» $\frac{1}{35}$	68,130
41- 50 % . . . . .	45	248,979	» $\frac{5}{45}$	27,665	» $\frac{8}{45}$	41,262
51-100 % . . . . .	80	1,018,916	» $\frac{5}{80}$	63,682	» $\frac{1}{80}$	101,892
		<hr/>		<hr/>		<hr/>
		3,233,251		977,591		1,389,170
		<hr/>		<hr/>		<hr/>

This fixed non-liability clause in the course of the four financial years has effected the following reductions, expressed as percentages, in the compensation payments:

	In the case of non liability fixed at 5 %	In the case of non liability fixed at 8 %
1928. . . . .	31.14	43.93
1929. . . . .	35.94	51.30
1930. . . . .	33.07	46.44
1931. . . . .	30.23	42.97
	<hr/>	<hr/>
Average . . . . .	32.59 per cent.	46.16 per cent
	<hr/>	<hr/>

As proof of the exactness of the calculations, it has been remarked that in spite of the very different results of the four years to which the statistics refer,

the percentage of saving in the compensation payments, whether in the course of good or bad seasons, has been the same and the variation from the mean does not exceed 10 per cent.

It seems the more remarkable that the ratio between the saving in the compensation payments and the premiums is, according to the results of different financial years, subject to very considerable fluctuations.

This relation between the saving in the compensation payments and the amount of premiums received appears to be as follows, taking into account the question of non-liability :

	With non-liability applying to damages under five per cent.	With non-liability applying to damages under eight per cent.
1928. . . . .	15.89	22.41
1929. . . . .	17.43	24.87
1930. . . . .	18.17	25.51
1931. . . . .	26.60	36.82
<hr/>		
Total of the four years . . . . .	73.09	109.61
Average per year . . . . .	19.5 %	27.4 %
<hr/> <hr/>		

As these figures show differences of more than 50 per cent. for the years in question, it may be observed that the relation between the total of the compensation payments saved and the premiums must be left out of count in determining the non-liability, and that the reduction in the compensation payments must alone be taken as basis.

The Farmers' Co-operative Insurance Association (*Gazdák*) (1) decided to increase the premiums for the 1932 season by 20 per cent. and at the same time to allow, in the case of "self-insurance" of 5 or 8 per cent. of the insured sum or of a part of the insured crops, a deduction on the premiums of 25 or 30 per cent. This society was obliged to have recourse to these measures in consequence of the unfavourable results of the financial year 1931 in the course of which the damages, including the cost of estimation, amounted to 118 per cent. of the premiums. Since the beginning of operations of the society in hail insurance, the percentage of damages has been maintained at 71 per cent. except during the last few years in the course of which it has risen to 95 per cent. Although the *Gazdák* reinsures its risks at Lloyd's, it endeavours to build up once again its indemnity reserve.

Up to the taking of these last resolutions, the Hungarian societies had adopted the system of unconditional non-liability, that is to say, they made no payment in respect of losses below 5 per cent. while losses exceeding that figure were completely compensated. At the same time the alternative was offered of covering also the losses below 5 per cent. against the payment of a supplementary premium.

(1) *Die Versicherung*, No. 12, Wien, 24 März 1932, S. 165.

*Statistics Compiled by the Valuation Office for Losses due to Hail, affecting Companies grouped in the Pool during the period 1920 to 1931.*

YEAR	Number of policies	Total sums assured	Net premiums	Premiums and charges	Premiums, charges and cost of administration	Number of cases of damage to crops	Losses
1920 . . . . .	5,019	Crowns 862,143,686	Crowns 23,250,206	Crowns 28,803,294	Crowns —	1,837	Crowns 10,718,584
1921 . . . . .	5,891	2,061,944,684	50,008,570	62,711,033	—	2,408	48,449,984
1922 . . . . .	8,743	7,555,000,047	170,377,828	184,219,643	211,003,643	2,048	71,763,181
1923 . . . . .	7,921	69,349,540,838	1,370,990,834	1,503,783,778	1,707,035,555	2,672	528,432,730
1924 . . . . .	11,910	1,387,970,386,992	27,198,587,406	29,902,414,197	33,984,063,151	5,209	45,886,125,811
1925 . . . . .	22,170	2,098,382,979,330	47,086,061,572	52,226,997,188	50,431,438,994	11,085	54,870,770,209
1926 . . . . .	25,929	Pengos 140,505,249	Pengos 3,592,303	Pengos 3,884,898	Pengos 4,424,088	6,876	Pengos 1,307,224
1927 . . . . .	24,845	156,308,000	3,379,543	3,688,484	4,198,267	6,180	2,492,806
1928 . . . . .	34,509	225,394,557	4,875,582	5,328,325	6,002,093	7,838	3,100,797
1929 . . . . .	37,689	184,616,232	3,935,150	4,208,091	4,889,045	9,892	2,371,144
1930 . . . . .	48,692	172,574,813	3,002,371	4,250,251	4,834,873	11,990	~678,498
1931 . . . . .	39,150	130,024,580	2,908,080	3,233,931	3,680,191	12,326	3,218,152

The fact is worth noting that in the event of insurance of several kinds of products, the non-liability is not calculated according to the total sum insured, but in accordance with the insured value of the products injured by the hail.

According to an announcement made on 1 July 1932, the Ministry of Finance was preparing a scheme for the foundation of an Institute of State Reinsurance with the view of lessening the burden of the total payments resulting from the reinsurances contracted with foreign insurance companies.

The following is a statement relating to the gross premiums received and the gross losses paid by each company forming part of the Pool during 1931 (1):

	Premiums	Claims paid
First Hungarian . . . . .	845,817	777,746
Foncière . . . . .	237,599	197,419
National . . . . .	346,413	245,994
Franco-Hungarian . . . . .	293,553	183,672
Hungarian-Dutch . . . . .	95,506	93,943
Hungarian Hail . . . . .	565,430	587,774
Hungarian Hail insurance . . . .	565,430	587,774
Association of Financing Institutes	51,261	32,505
Turul. . . . .	55,600	25,713
Donau . . . . .	141,109	122,187
Phönix . . . . .	193,336	123,878
Riunione . . . . .	384,290	304,251
Royal-Exchange . . . . .	488,996	501,323
Sum . . . . .	45,684	29,514
	<hr/> 3,744,594	<hr/> 3,225,919

The following are the figures relating to premiums received and compensation payments made by the three societies which do not form part of the Pool during the years 1926-1931 (2), expressed in thousands of pengős.

		Gazdák	Patria	First Christian
1926	Premiums . . . . .	909	221	60
	Claims paid . . . . .	104	93	41
1927	Premiums . . . . .	935	205	107
	Claims paid . . . . .	1013	206	78
1928	Premiums . . . . .	1398	219	122
	Claims paid . . . . .	1068	141	112
1929	Premiums . . . . .	1172	174	103
	Claims paid . . . . .	766	44	74
1930	Premiums . . . . .	1268	175	117
	Claims paid . . . . .	1140	173	67
1931	Premiums . . . . .	1278	178	107
	Claims paid . . . . .	1169	192	75

(1) *Die Versicherung*, No. 47, Wien, 19 November 1932, S. 738.

(2) *Assekuranz Jahrbuch*, n. 51, p. 655 and *Die Versicherung*, loc. cit.



The following is a table relating to hail insurance operations in effect in Hungary during 1929 grouped according to the main groups of products insured against hail (1).

	Hungarian companies	Foreign companies	Totals
Number of policies . . . . .	44,442	10,442	54,884
<i>Total sums insured for by groups of products</i> <i>(in thousands of pengös);</i>			
Fodder grasses and various fodder crops . . . . .	58	5	63
Maize, fodder beets and potatoes . . . . .	7,156	1,642	8,798
Wheat . . . . .	100,003	28,504	128,507
Meslin, rye, barley, oats, spring corn . . . . .	78,455	24,524	102,979
Oil-yielding plants, legumes, sugar-beets, vetches for seed, millet, buckwheat . . . . .	6,147	2,350	8,497
Millet, clover, seed, grass seed, poppies, rice and other commercial crops . . . . .	1,229	460	1,689
Hemp, flax, hempseed, linseed . . . . .	1,328	426	1,748
Vines, hops . . . . .	2,143	732	2,875
Tobacco . . . . .	3,109	1,007	4,116
Total . . . . .	199,628	59,644	259,272
Premiums in thousands of pengös . . . . .	4,069	1,274	5,343
Claims paid :			
Number of losses . . . . .	10,470	2,484	12,954
Total claims paid (thousands of pengös) . . . . .	2,442	755	3,197

F. A.

## BIBLIOGRAPHY ON ECONOMIC AND SOCIAL QUESTIONS

DELOS Alb., Ing Agr.: *Traité d'économie rurale. Tome I: La terre. Encyclopédie agronomique et vétérinaire. Bibliothèque agronomique belge. N° 21. Gembloux, Jules Ducolot 1932. Price fr. 38*

[The first volume of a treatise on Rural Economy has just been published by Jules Ducolot. Its author, Professor Delos of the State Agricultural Institute at Gembloux, treats his subject under two aspects; one dealing with "the realization of internal harmony in agricultural undertakings", the other dealing with the exterior relations between agriculture and the economic world. The whole structure of Professor Delos' work is the natural result of this basic conception of rural economy. The traditional economic subdivision of the three essential factors which influence agricultural production has been adhered to: land, capital and labour. The first volume is dedicated to the study of these factors: the land, its characteristics, value, improvements, taxation, systems of cultivation. Among the general causes which determine the value of the land, Professor Delos mentions the following: (a) the possibility

(1) Hungarian Annual Statistical Yearbook, 1930. Published by the Royal Hungarian Central Office of Statistics, p. 216.

of improving it; (b) the improvements and works executed or planned by public administrations; (c) the tastes and aspirations of the agricultural population in agricultural matters, (d) the systems of cultivation of the land, (e) the parcelling or rather the arrangement of the parcels of a certain property; (f) the size and nature of farms; (g) the labour available on the spot or obtained through migration.

One chapter deals particularly with the legal aspects of landed property and agricultural exploitation. This part of Professor Delos' work is completed by a statement on present day agricultural taxation in Belgium. The next chapter deals with the systems of cultivation and crop rotation.

The second volume is dedicated to the study of the fundamental elements of fixed and circulating capital. The third volume will contain: (1) a study of the factor "work", from an economic and social point of view (2) a study of the results obtained through the working of the three factors mentioned above, *i. e.*, an economic account of crop farming and of animal husbandry.

It is Professor Delos' intention to dedicate the IV volume of his work to comparative rural economy, agrarian policy, industrial economy, marketing of agricultural and colonial products etc.

The 1st volume takes into account the experience made in various countries in regard to several fundamental problems of rural economy, and it emphasizes the present state of the organization of Belgian agriculture.

LANGE OSKAR: *Die Preisdispersion als Mittel zur statistischen Messung wirtschaftlicher Gleichgewichtsstörungen* (Veröffentlichungen der Frankfurter Gesellschaft für Konjunkturforschung, N. F. Heft 4). Hans Buske Verlag, Leipzig, 1932, S. 56.

[The book under review is an interesting contribution to the empirical study of the business cycle, in which the author makes an attempt to follow and to measure the inner working of forces tending to produce economic dislocations and crises. Hitherto, students of economic fluctuations have mostly focussed attention upon the price movements of particular commodities or upon changes in the general price level as represented by index numbers of prices. These methods of approaching the problem of economic dislocations, though valuable in the investigation of special problems, fail to reach the real root of the problem of economic dislocations and crises, since these are concerned with disturbances in the relations between the production and prices of the various goods and services rather than with the changes which occur in course of time in the general price level or in the prices of particular commodities. Investigation, therefore, should be directed towards the elucidation of the dislocations taking place in the balance of the various parts of the economic system, which is reflected in the disturbance of the interrelations of prices of the different commodities. This equilibrium must not be conceived as a static condition, because it is essentially dynamic, and economic evolution proceeds by innumerable and constant small dislocations in supply and demand and in prices, which stimulate and direct production and trade. A certain fluidity in the constitution and balance of the economic system must thus be considered normal and healthy, and the relatively slight shifts in this balance, which provide the shocks necessary to keep economic life going, are indispensable. Considered statistically, these shifts in economic equilibrium, which keep the system in motion, are naturally expressed in changes in the dispersion of prices about their respective trend values, and the more serious the disturbance of equilibrium, the greater will be these changes. In a period of normal economic activities in which no particular dislocations upset the balance of the economic system, and the latter is kept in regular motion by slight occasional shifts

taking place in its various parts, the prices of particular commodities tend to fluctuate within a restricted range about the imaginary lines representing their trends. These trend lines will form a sort of bunch, and the moving average of synchronous trend values of prices of the particular commodities will represent the general trend of prices. The dispersion of trend values of particular prices about the general trend, measured by one of the recognised measures of dispersion – preferably logarithmic –, will then show the extent of dislocations which can be considered as normal in a regularly functioning economic system. This dispersion of trend values of prices of particular commodities about their general trend can thus be looked upon as a standard for the determination of the extent of price fluctuations which are normal in everyday economic life and to which the author refers as *Gleichgewichtsverschiebungen* or shifts of balance. To find out whether a given price situation falls within the limits of such shifts of balance, or whether it represents a *Gleichgewichtsstörung* or dislocation of equilibrium of a more serious nature, involving a more or less prolonged and far-reaching disturbance or crisis, it is, therefore, necessary to compare the dispersion of actual price variations with that of corresponding trend values. A coefficient of dislocation, designated by the symbol  $Q$ , is thus found, representing a fraction of which the numerator is the logarithmic standard deviation of actual price variations and the denominator the logarithmic standard deviation of corresponding trend values. The coefficient should be 100 if the dispersion of actual prices is just normal, though in practice, owing to small current disturbances in actual price movements, which the author calls *Friktionerscheinungen*, it will mostly, even under perfectly normal conditions, exceed it slightly. As the coefficient of dislocation is always calculated from a limited sample of price series, errors of sampling have to be taken into account, and only if the coefficient exceeds 100 by at least three times its average error (*mittleres Fehler*) within which range the excess may be accounted for by errors of sampling, is one in presence of a real economic disturbance which, if sufficiently pronounced, is referred to as a crisis.]

G. P.

*Pioneer Settlement Cooperative Studies*, American Geographical Society New York, 1932. Special Publication N° 14

[The American Geographical Society of New York has made an interesting addition to its series of special pamphlets on problems of general importance. This volume, the 14th of the series, contains a number of co-operative studies on Colonisation and presents this problem under its most complex aspects. In a way these studies on Pioneer Settlement might be considered as a continuation and a completion of the "Pioneer Fringe" by Isaiah Bowman containing a discussion of the general principles of colonisation as illustrated by regional examples which the same Society published in 1931.

The present publication constitutes "a world survey of pioneer problems by specialists who have an intimate personal knowledge of the regions they discuss".

The editors observe that in some cases, experts may notice some discrepancies between conditions of today and the conditions prevailing at the time when the surveys were made. But it must be remembered that these studies were submitted to the American Geographical Society during a period of three consecutive years. The problems discussed however remain essentially the same. The studies go to show that the period of the picturesque acquisition of lands, difficult to conquer but highly remunerative when the conquest has been made, is over. Colonisation is today everywhere the result of the industry, ability, will power and adaptability of the pioneers to local conditions. Mechanical means play their own part in the ultimate success of colonising undertakings

Machinery has deprived the work of the pioneer of many of its more brutal elements. The spirit of the pioneer itself has changed considerably, inasmuch as he now faces his task knowing that he can count upon the mechanical means which will help him to overcome his greatest difficulties.

All this is amply demonstrated in the 22 studies which make up the volume.

The first part of the book contains a study of colonisation possibilities in North-western Canada, in the Prairie Provinces and in the great Northern Plains of the United States. The authors agree that the colonisation of these immense regions is hardly started, even though some sections may have been exploited for a considerable period of time and can no longer be strictly classed as pioneer lands.

Of particular interest are the studies on conditions in Alaska, in the furthest northern section of Canada and on the Northwestern fringe of the United States. Improved means of transport, new machinery and the adaptation of old crops or the introduction of new ones have made it possible to advance cereal growing beyond the limit of the Arctic Circle. This, in the opinion of experts, means that even such remote regions, which until a few years ago were considered unfit for human life, or at least for permanent colonisation, can be utilised for settlement.

Three very important studies on South American colonisation regions contain important conclusions. The Eastern coast line and valleys of the Andes, the enormous extensions of the Matto Grosso and of the Gran Chaco highlands and part of Patagonia have millions of acres available for cultivation, provided they are made accessible from and to distribution centres.

Then follow some studies on South Africa and certain sections of Northern Africa. As regards Northern Africa the author of the study on Algeria, Tunis and Morocco expresses the view that there is here a vast field for colonisation, provided certain conditions, such as the necessity of employing native labour, are taken into account. This condition applies also to South Africa, where intensive colonisation is possible and desirable.

The studies on North European Russia and Eurasia, on internal colonisation in the U. S. S. R. on Mongolia and Manchuria, with all the racial problems connected with colonisation work in those regions, constitute a series of chapters which are the more interesting as such regions are known to so few people. The casual reader will be able better to understand some of the political events which have occurred and are occurring in those parts of the world and would otherwise remain rather obscure.

The last part of the volume deals with the conditions and limits of colonisation in Tasmania and in New Zealand. Some sections of Australia seem to offer a particularly promising field to colonising enterprise, should the need for new land be felt.

Biographical notes on the authors of the various studies, a table of comparative measures and an index complete this interesting publication].

V. F.

UNION OF SOUTH AFRICA — Report of the Native Economic Commission 1930-1932. The Government Printer Pretoria 1932, pp. 345. Price: 2 s 6 d.

[The above Commission was appointed in June 1930 to enquire into and report upon *inter alia* the economic and social conditions of the native (1) population especially in the larger towns of the Union, and, in connection with the economic and social effect

(1) The word "native" is now used throughout the Union for the Bantu-speaking peoples. It is accordingly used in this Report, and is written with a capital initial letter. It is not regarded by the Commissioners as a very suitable word, but is adopted for purposes of convenience.

upon the European population of residence of natives in the urban areas, the measures, if any, to be adopted to prevent the increasing migration of natives into such areas.

It was recognised by the Commissioners that if such investigation was to have value and significance, it was essential to take count not merely of the small group of urbanised natives, but also of the great mass of the native population engaged in farming in the Union, whether farming their own lands in the "Reserves", or working on European farms.

It was accordingly resolved at the first meeting of the Commissioners that visits should be made to typical rural areas (including certain of the Native Reserves), and oral evidence taken in public session in respect to conditions. Among the witnesses so heard were a large number of Native Chiefs, members of Native Councils (administering the Reserves), as well as the Native Commissioners in various districts, other officials, missionaries, and farmers' associations. The Director of Native Agriculture gave oral evidence, in addition to presenting certain written reports. The first 60 pages of the Report, together with an addendum of similar length by a single member of the Commission, and several important appendices, deal with the native farming population and the resulting problems with special reference to the migration into towns.

An estimate made in 1929 showed that out of a total population of the Union of about 7.2 millions of all races, nearly four million are natives living in the Reserves, or rural areas set aside for native occupation under the Natives Lands Act of 1913, varying in extent in the different provinces. The number of natives working on European farms is probably at no time less than half a million, but is difficult to determine exactly, as it is liable to be increased during certain seasons by natives coming from the Reserves, and also owing to the fact that the census is not now taken in respect of non-Europeans.

Farming on the Reserves is conditioned by the methods of a primitive subsistence economy, characterised by a wasteful utilisation of the soil and a form of cattle-holding based on religious and social ideas rather than on economic considerations of any kind. The result is that the carrying capacity of the land is being diminished for live stock and human beings alike, owing to erosion, disappearance of nutritive grasses, destruction of timber, drying up of springs, and in short the creation of desert conditions. Even where, as in the Transkei, in the extreme north-east of Cape Province, ameliorative measures have been adopted in regard to cultivation, the persistence of over-stocking militates against the efforts to restore the natural fertility of the land. In this area, and in some others, the Native Councils have established Native Agricultural Schools in which younger educated natives can receive a training as demonstrators, and in this way very promising results have been achieved in raising the level of cropping methods practised; it remains however extremely difficult for these demonstrators, even though they are in a position to win the confidence of the tribal masses, to introduce against traditional prejudices the simple ideas of pasture and herd improvement by means of fencing and limitation of numbers to available feed. It is in fact the undeveloped state of the Reserves with consequent pressure of population on land and absence of scope or prospects for the more advanced natives, which is the main cause of the noticeable drift to towns. Extension of the native demonstrator system is regarded as the most hopeful method of combatting the evils, and the Director of Native Agriculture informed the Commission that the number of demonstrators should be increased from the existing 155 to 400 if any real impression was to be made within the next ten years on agricultural and pastoral methods in the Reserves.

In regard to native labour on European farms, the main question is that of the working of the so-called "labour tenancy", by which is understood the giving of services

for a certain period in the year to the farmer by the native and his family in return for the right to reside on the farmer's land, to cultivate a portion of land and to graze his stock on the farm.

By this system the farmers secure a supply of manual labour with little or no cash outlay, and the native who has been driven by shortage of land from the Reserves obtains land for his cattle. Various other privileges are usually granted, such as a building site and free use of available building materials; also, during the days of labour, food for the tenant's family and even sometimes cash wages. At the same time the system tends to give rise to disputes and friction; the natives complain of limitation of their live stock, poor quality of lands given for ploughing, etc. From the farmer's standpoint, since the native largely retains his far from progressive cropping and pastoral practices, the full value of the land is not being obtained, and hence it is increasingly felt that this method of securing a labour supply is uneconomic, the only reason for its retention on many farms being that there seems at present no satisfactory alternative. The discontent of the younger natives leads to their migration to the towns, while the heads of families will sometimes depart with their herds and take to a wandering life. The system of labour tenancy is in fact disintegrating, although still deeply rooted in the special conditions of European landholding and native mentality.

The Commission recommends the enforcement of written contracts, and the gradual introduction of a system of payment by the farmer of an agreed cash wage and by the native of a regulated charge for use of land for cropping or grazing. One member of the Commission in a separate report recommends that it should be made possible to lease lands, in the areas reserved for European ownership, to natives on a cash rent basis, subject to stipulations as to proper utilisation of the land.

Throughout the Report stress is laid on the need for bringing about by education a change in the outlook of the native but it is also recognised that this must be a very gradual process. A great impetus has been given to the progress of the natives and of their agriculture by the appointment in 1929 of a Director of Native Agriculture in the Department of Native Affairs and by the enlightened attention devoted by the Director and his staff to the problems of the native cultivator alike on the Reserves and on the European farms in the Union.

In conclusion the following remark may be quoted from the addendum Report of one of the Commissioners, as bearing on the general question of the African native which has from time to time received attention in this Review. "One of the most serious obstacles in the way of the Natives' progress is the belief, prevalent among Europeans in the Union, that the Native is incapable of progress and must always remain backward. The falsity of this belief is shown in the success achieved by individual Union Natives in a profession such as medicine, teaching, farming, and by bodies of Natives in administering their own affairs; and its falsity is still further shown by the advance made in several parts of Africa, such as Nigeria and Tanganyika, where trust has been shown in the Natives' ability to evolve the necessary adaptation of their own institutions to meet the changes brought about in their lives by the coming of European civilisation. In the face of the evidence, it is idle to deny the capacity of the Natives to respond to intelligent guidance and training."

From the standpoint of the Union as a whole, a raising of the economic position of the Native with consequent increase in purchasing power must undoubtedly react beneficially on the general economic conditions].

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# MONTHLY BULLETIN OF AGRICULTURAL ECONOMICS AND SOCIOLOGY

## LAND SYSTEMS

### Agrarian Reform in Spain.

#### I. -- SPANISH AGRICULTURE BEFORE THE REFORM.

The boundaries of the Spanish Republic, which together with Portugal forms the Iberian Peninsula, are on the north the Cantabrian Sea and France, on the east the Mediterranean, on the south the Mediterranean, the Straits of Gibraltar and the Atlantic Ocean, and on the west Portugal and the Atlantic. The territorial area is 505,196.52 km. and there is a population of 25 million inhabitants.

The country consists of a great tableland of an average height of 700 metres above sea-level, divided into two parts, the Northern and the Southern tablelands, by the great mountain range of the Central system.

Spanish territory may be regarded as divided into the following agricultural regions :

#### A. *Inland.*

*The lower Northern plateau.* — Formed by the upper, or catchment, basin of the Douro and extending over 18.7 per cent. of the whole national territory.

*The lower Southern plateau.* — Formed by the upper or catchment basins of the Tagus and the Guadiana, and representing 25 per cent. of the whole territory.

*The depression of the Ebro.* — Including the regions which drain into the Ebro. This basin, which has a climate peculiar to itself, is frequently subject to long continued droughts. It represents 15.5 per cent. of Spanish territory.

#### B. *Transition regions.*

*The Baetic or Andalusian Depression.* — This consists of the Andalusian region, that is to say, the basin of the Guadalquivir, representing 13 per cent. of the whole territory.

### C. Coast zones.

*The Mediterranean zone.* — Consisting of Catalonia, Castellon, Valencia, Alicante, Murcia, Almeria, Granada and Malaga. Similarities in the agriculture would indicate the inclusion of the island province of the Balearic Islands. This zone represents 16 per cent. of the territory.

*The Cantabrian-Atlantic zone.* — This zone includes all the provinces of the North of Spain and extends to 9.8 per cent. of the whole territory.

*The Insular zone of the Canaries.* — This is formed by the archipelago of the Canary Islands and represents 1.4 per cent. of the territory.

Nearly all these regions have certain affinities with other countries in regard to crops grown. As regards the Central plateau however the cultivation affinities are only to be found in the extreme east of Europe or western Asia. Otherwise the Cantabrian-Atlantic zone resembles in its agriculture Western Europe; the Mediterranean zone and the Ebro depression are agricultural regions very similar to those of Southern Europe, while the crops of the Andalusian depression much resemble those which prevail in that part of North Africa which borders on the Atlantic.

As regards conditions of plant growth Spanish soil may be considered as divided into two groups: one forming what is known as the *dry lands* of Spain occupying 90 per cent. of the territory, and the other formed by the remaining 10 per cent. constituting the *rainlands*. In the former group there is a characteristic reaction against drought, the rainwater falling on the waste lands being stored and used for the cultivated or cultivable lands by means of the various methods made possible by the technique of agricultural hydrography. Since this method of land improvement is costly and difficult, it is applied only to a limited area constituting the irrigation zones, while the other lands of this group form the zone of *arid lands*. The group of *rainlands* in Spain are characterised by the contrary procedure, that is to say, by the struggle against the excess of moisture, on account of which it is essential to drain, rather than to irrigate, the lands.

The following figures will illustrate the distribution of the soil in the territory of the Republic.

The total area of Spain, expressed in hectares, is 50,510,212 distributed as follows:

Cultivated area . . . . .	hectares	18,353,546	or	38.3	per cent. of total
Forest area . . . . .	"	25,281,100	"	50.0	" "
Unproductive area . . . . .	"	3,814,628	"	6.0	" "
Area taken up for roads or for urban centres . . . . .	"	2,060,538	"	4.1	" "

Although the above grouping shows 88.3 of the total area to be under cultivation or forest land, the actual situation is unsatisfactory since the greater part



of the forest land is unproductive on account of its altitude, its drought conditions, and because owing to its geological structure it is unsuitable for farming. The same may be said of the cultivated area where owing to adherence to old-fashioned methods the results that ought to be obtained cannot be secured.

Although so backward, agriculture is the principal source of wealth in Spain. The proportion of the population actively engaged in agriculture is 70 per cent. and the value of the production per hectare, taking into account the supplementary values of stockbreeding and of the industries for transformation of agricultural products, is 184 pesetas. This means for each Spanish citizen, on the basis of a census population return of 22 million persons, the annual sum of 450 pesetas.

The strictly agricultural production represents an annual value of 9 milliards distributed as follows :

Cereals and leguminous crops . . . . .	4,501,000,000 pesetas
Root and tuber crops . . . . .	860,000,000    "
Vine products . . . . .	792,000,000    "
Olive products. . . . .	647,000,000    "
Fruits . . . . .	2,000,000,000   "
Other products . . . . .	200,000,000    "

Wheat is the cereal most widely cultivated, and the annual production reaches an average of 38 million quintals, nearly covering the requirements of the country.

In the group of root and tuber crops, the first place is held by the production of potatoes.

Vine growing occupies 1,500,000 hectares, and more than 22 million hectolitres of wine are obtained besides table grapes of world renown.

The production from olive cultivation is the largest in the world, and the area cultivated is 1,800,000 hectares.

The fruit growing is on a large scale, and often gives immensely high values to the land so utilised, as returns are obtained up to 2,300 pesetas per hectare, although the average return per hectare under this cultivation does not exceed 444 pesetas.

The above statements will give an adequate idea of the agricultural position in Spain. Some examination will now be undertaken of the position of land holding.

In this respect, figures are available only for half of the national territory, the portion mainly required for the purposes of the agrarian reform, as will be seen from the sequel.

A statistical table is reproduced here based on the latest official figures of the Land Survey which are brought up to 31 December 1931. This table shows the total number of farm holdings constituting the 22,435,090 hectares of the cadastral survey, grouped according to area :

REGIONS	Under 1 ha.		From 1 to 5 ha.		From 5 to 10 ha.		From 10 to 50 ha.	
	Number of farms	Area	Number of farms	Area	Number of farms	Area	Number of farms	Area
Castile-Leon . . . . .	2,422,324	768,247	258,057	419,637	14,600	84,064	8,544	165,021
Central . . . . .	1,490,198	477,110	230,618	437,528	12,995	88,208	9,438	207,346
Coastal provinces . .	1,133,390	424,140	186,794	348,678	21,176	138,953	13,900	274,442
South-Eastern provinces . . . . .	326,562	105,251	122,017	268,573	21,341	136,049	17,773	350,132
La Mancha . . . . .	858,036	400,592	468,300	938,470	47,653	337,398	29,154	603,012
Extremadura . . . . .	794,427	342,600	210,849	426,123	26,538	178,493	19,028	405,823
Provinces adjacent to Andalusia . . .	395,805	154,089	119,633	245,309	15,438	103,022	12,058	230,805
Andalusia . . . . .	512,550	303,213	280,765	581,139	46,043	313,229	14,3783	684,402

REGIONS	From 50 to 100 ha		From 100 to 250 ha		From 250 to 500 ha.		From 500 to 1,000 ha	
	Number of farms	Area	Number of farms	Area	Number of farms	Area	Number of farms	Area
Castile-Leon . . . . .	1,615	104,105	786	101,250	288	99,199	81	53,847
Central . . . . .	1,733	117,218	992	144,494	320	103,920	92	63,586
Coastal provinces . .	2,321	153,790	1,221	176,740	460	149,184	97	68,889
South-Eastern provinces . . . . .	2,755	172,281	1,217	181,190	450	135,530	152	98,086
La Mancha . . . . .	1,018	273,191	2,893	397,318	1,566	481,276	675	458,549
Extremadura . . . . .	5,156	335,486	3,620	528,335	1,779	571,423	587	398,148
Provinces adjacent to Andalusia . . .	2,242	133,689	1,441	210,305	733	245,575	303	198,365
Andalusia . . . . .	5,819	401,016	4,135	597,316	2,406	775,923	1,093	727,919

REGIONS	From 1,000 to 2,500 ha		From 2,500 to 5,000 ha.		Over 5,000 ha.	
	Number of farms	Area	Number of farms	Area	Number of farms	Area
Castile-Leon . . . . .	49	71,369	14	48,322	3	13,678
Central . . . . .	32	45,537	4	13,695	1	5,034
Coastal provinces . . . . .	15	22,840	3	11,381	1	6,212
South-Eastern provinces . . . . .	39	66,189	4	13,681	—	—
La Mancha . . . . .	343	520,819	69	239,005	26	180,464
Extremadura . . . . .	159	234,746	10	29,534	1	5,001
Provinces adjacent to Andalusia . . . .	145	211,797	29	95,760	11	72,440
Andalusia . . . . .	405	603,302	50	171,905	31	176,390

From the above table certain consequences may be deduced which emphasise the absolute necessity for bringing about a legal reform in land ownership.

In fact, in the total of the area under survey (22,435,090 ha.), there are 10,214,352 farm holdings, of which 10,016,994 (or 98 per cent.) consist of less than 10 hectares. Although this seems a very high percentage of all the farms, the area represents merely 36 per cent. of the area under review, and, included in this last percentage, 34 per cent. represents the farms of less than one hectare, that is to say, the dwarf holdings, the existence of which is so irrational and un economic that it may well be designated as " the shredding of ownership. "

On the other hand, the large farms of more than 500 hectares number 4,527 and their total area is 4,916,590 hectares, or one fourth of the whole area included in the table. Moreover, 1,444 farms of over 1,000 hectares account for 2,849,101 hectares, that is to say the average area of *three Spanish provinces*, and an area equivalent to the eight million farms of one hectare in extent which are shown in the survey.

All these data point to the prevalence of both dwarf holdings and latifundia, and accordingly to the necessity of legal reform of territorial ownership, by which concentration or partial splitting of holdings, according to the circumstances, may be attained. The result should be the creation of a reasonable type of holding with respect to the characteristics and requirements of each agricultural region.

## 2 --- NECESSITY FOR THE REFORM AND OBJECTS IN VIEW.

From the foregoing statement it will be clear that the situation of Spanish agriculture calls for reform. In fact taking into account the natural conditions in Spain for farming, the greater number of the products show per unit of area indices lower than should theoretically be the case. In addition, forestry and stockbreeding are far from remunerative, the means of transport are antiquated or backward, marketing and customs organisation is imperfect, in agricultural credit and in co-operation, whether for sale or for distribution, the first steps only have been taken, technique generally speaking is rudimentary and there is no co-ordinated plan for utilisation of the national lands, while the rural industries subsidiary to agriculture, or necessarily bound up with it, are far from attaining the importance that they should do in Spain, as a European country of more than 500,000 square kilometres in area. All this backwardness and inequality justifies the necessity for the agrarian reform, which should be carried into effect in almost every territory of the Republic.

The defective element in the normal working of agriculture in Spain is to be ascribed to the variability that characterises it, a result, as has been shown, of certain orographical and climatic features, which, together with the nature of the soil impart a distinctive aspect not only to each province but also to each commune, and give rise to a number of difficulties which cause interruption in systematic farming work.

The problem of the land in Spain is not however bound up merely with the climatic and other factors referred to above, but is affected as has been stated by the system of tenure. On the northern and southern plateaux, where subdivision of the land into small holdings is most fully carried out, and the farm worker accordingly has a greater share of the farmland, the recurrent evil of unemployment is not felt with that intensity with which it is felt in Andalusia and in Estremadura. These last are regions of large estates and of latifundia where forced periods of agricultural idleness are combined with adverse meteorological conditions in the years of bad harvests which form the special features of the extensive cultivation of the Spanish arid lands.

It is thus undeniable that the origin of the agricultural deficiency, which it is proposed to remedy as far as possible by the agrarian reform, lies in the natural conditions of soil and climate taken together with the land tenure system. It is with these two important causes that the Reform proposes to deal, and it is reasonable to suppose that a level of attainment will be reached such as is practicable in the present state of world agricultural progress.

The origin of the evil having been recognised, the Reform proposes to concentrate upon the *internal* and *external* factors of agricultural production. Among internal factors the factor of the *land* comes first. In place of regarding the land as accumulated capital, as it is usually regarded, the tendency under the reform is to transform the conception into that of an irreplaceable instrument of production. The land has a social function to fulfil, and must undergo modification in that sense. The law regards a redistribution of the soil as essential, because the present system of private ownership, with all the privileges accumulated over many years of favourable legislation during which other social theories prevailed, cannot satisfy requirements which the Reform endeavours to meet. The land cannot be accumulated in the hands of a few persons who from lack of stimulus, of working capital and technical skill cannot make it as productive as it should be; neither should it be split into parcels smaller than the limit imposed by the technique for each class of cultivation, so as to make its farming uneconomic; it is essential to break up land or to concentrate it, according to circumstances and the requirements imposed by the most suitable form of cultivation.

Another *internal* factor with which the Reform deals is *capital* in its different forms (fixed, circulating, live or dead stock). Land must not however be considered as real capital and but as an instrument of production. The service of capital in land at the present time absorbs the greater part of the profit derived from farming and for its purchase are employed large sums which are deducted almost entirely from the working capital and the fair remuneration of labour.

In regard to *labour*, its just share has up to the present been curtailed, as it consists in a fixed remuneration in the form of a weekly or daily wage, without, it is true, incurring the risks of the yearly farming balance-sheet, but without any share in the profits. Yet the labour factor is the most important, since on it the natural productivity of the land depends, as is not the case in forestry or in the more primitive forms of stock farming. To the labour factor

is owed that transformation in cultivable land which has been brought about by permanent improvements, beginning with the breaking up of the good land, going on to the planting of trees and culminating in the operations of regulation and levelling.

The Reform moreover tends to act upon the *external* factors of production, such as the public authorities, the community itself, the markets and associations. Of great importance also is the official intervention of the various organisations of the public authority or Government. Not only may the Government in its zeal for agriculture put in hand public works or develop experiment and demonstration services in addition to providing technical instruction in agriculture, but the direction given to taxation is also of great importance, since the share which the State assigns to itself, through the imposition of taxes, in the net return from agricultural production, or it may be in the general assessable wealth, has a decisive influence on the rural economy.

Population too with its phenomena of density, absenteeism, emigration, concentration and dispersion, etc., is also an *external* factor of considerable importance in agricultural production and for this reason the Reform proposals deal also with population.

Lastly there are the markets, internal and external, with their problems transport and tariffs as well as the agricultural associations which by their intervention determine the rural prosperity. The markets can, by perfecting their organisation and equipment regulate credit, sales and consumption of the products, and become yet another of the factors in agricultural production which fall within the field of activity of Reform.

To sum up, the objects of the Spanish agrarian reform are technical, social and economic and cover all aspects relevant to these, co-ordinating them with a view to bringing about a just and effective settlement.

A review will now be made of the most striking features of the Law of Agrarian Reform, the complete text of which has been published in the Year-book of Agricultural Legislation of this Institute.

### 3 - THE LAW OF THE AGRARIAN REFORM

In the month of September 1932 two laws were promulgated, that of the Agrarian Reform on 15 September, and that by which the Institute of the Agrarian Reform, the organisation for carrying out the Reform, was established on 23 September 1932.

The following comments may be made on the text.

In the first chapter (*Base I*) it is stated that the law . . . " begins to take effect from the day of its promulgation " and it is added . . . " none the less, the juridical conditions of a private character relating to rural ownership which may have been voluntarily constituted since 14 April 1931 (the date of the proclamation of the Republic) up to the time of the promulgation of the law will be held, for the purposes of the law, to be not constituted, in so far as they may be in any way opposed to the full effect of the law. "

It was necessary to give the law this retrospective character, owing to the fact that, as the general tendency which would be taken by the Reform became

clear immediately on the establishment of the Republic, new juridical situations were created by the private interests that were threatened by the future Reform, with the object of evading the provisions and of impeding the course of the projected measure.

Naturally, the case contemplated here is not that of a legitimate purchase made in good faith; the retrospective clause is directed merely against rights deliberately constituted with full knowledge of the menace involved in the new law, and with the intention of counteracting and evading the objects proposed by the Reform. The equitable intention of the law is clear from the fact of the limitation of the cases to which this retrospective measure applies, as follows:

(a) if, before 14 April, the nature of the estates had been such as to make it necessary to subject them to the expropriation contemplated in the Reform, that is to say, such estates as would have been expropriated on 14 April, had the law then been in force;

(b) if the characteristic features of the estates have been changed in virtue of juridical situations specially constituted in the period intervening between the establishment of the Republic and the promulgation of the Law of the Agrarian Reform, and lastly;

(c) if any modification of the characteristic features removes the estates from the sway of the law of the land.

In Chapter 2 (*Base 2*) the beneficent effects of the law for rural workers are outlined. Although "... the effects of the law will extend to the whole territory of the Republic" in the first instance it will be brought into force without delay in those communes where the enforced idleness and the number of persons not in employment render it most necessary, *i. e.*, in Andalusia, Extremadura, Ciudad Real, Toledo, Albacete and Salamanca. This chapter also contains provisions relating to credit which will be mentioned in their place.

Base 3 lays down that ... "the execution of the Law shall be entrusted to the Institute of Agrarian Reform, as a body the function of which is to effect a transformation in the Spanish rural organisation." The Institute will be a duly constituted public body with independent resources. It will be under the direction of a Council consisting of agricultural experts, legal experts, representatives of official agricultural credit, landowners, tenants and agricultural workers.

A few days after the publication of the Reform on 23 September, this Institute was established, and immediately entered on its activities. Subsequently certain reforms were introduced which the situation appeared to demand and were based on the decree of 5 November of the same year 1932.

The Institute of Agrarian Reform, in accordance with Base 4, made it its first business to define and give content to the work of introduction of the Reform, to establish the various stages of its realisation, and to indicate the concrete regional forms that must be adopted for its speedy and effective introduction.

The Institute of Agrarian Reform, in its capacity of a loyal auxiliary organisation of the Reform, endeavours to guide Spanish agricultural,

forestry and stockfarming production along the lines contemplated in the Law, to make provision for development and to carry development to an appropriate point.

In Base 5, the Law defines in detail the lands that must be expropriated in the interest of the introduction of the Reform. All lands will be liable to expropriation that belong to any individual or public body and fall under the following definitions: lands of the arid zone under crops and pasture rotation, from 300 to 600 hectares; olive plantations on the arid zone, associated or not with other crops, from 150 to 300 hectares; vineyards in the arid zone, from 100 to 150 hectares; arid lands regularly planted with trees or shrubs, from 100 to 200 hectares; pasture grounds partly under plough with or without tree planting, from 400 to 750 hectares; all the farmlands included in the large irrigable zones with State-aided irrigation works and an area of between 10 and 50 hectares. Those estates will also be liable to expropriation which are voluntarily submitted by their owners provided that their acquisition is regarded as of utility for the purposes of the agrarian reform; rural lands belonging to public corporations, foundations or institutions farmed by tenant farmers, in share tenancy or any other form of indirect cultivation; estates that have been acquired for purposes of speculation or with the sole object of collecting a rent without any intention of cultivation by the purchaser; seigniorial lands either uncultivated or badly cultivated; lands which it would have been possible to irrigate, in view of the presence of a pool or in consequence of the establishment by law of the obligation to irrigate, but which have not yet been irrigated; also lands included in the new irrigation schemes undertaken at the expense of the State; lands situated at least two kilometres from the borders of centres of population not exceeding 25,000 inhabitants, when the owner of the said lands possesses in the same commune other property on which the return for purposes of the land tax exceeds the sum of one thousand pesetas, while he does not cultivate the said lands directly; lands conveyed by contract on special terms binding both parties, and lands that shall have been assigned to the State, the region, province or commune in payment of a debt, as an inheritance or a legacy; lands farmed systematically on a tenancy basis either on a money rent or with payment in kind over a period of twelve years or more provided that they do not belong to minors or incapacitated persons and are not property constituting the non-estimated dowry of married women or lands held in usufruct; lands occupying an area greater than one sixth of the total area of the land of the commune in which they are enclosed. Lands such as these last, and in particular lands which might have been transformed into irrigated lands but which have not been so treated by their owners, will be expropriated by preference.

Previously to the publication of the Law of Agrarian Reform, the Government had decreed on 25 August 1932 the confiscation of all the rural estates and country dwellings belonging to persons who had taken part in the revolutionary movement of 10 August 1932. The lands were to be expropriated without any compensation and were to pass in their entirety to the State for assignment to the purposes of the Agrarian Reform. The law compels

landowners compromised in the revolutionary movement to continue to cultivate their lands up to the time at which the State takes charge, if it is a case of direct farming. If the farm was leased, the law provides for the rents being collected by the State. The law of confiscation threatens with imprisonment of varying duration owners who do any injury to the rural estates thus subject to confiscation, either by careless cultivation tending to reduce the normal production or by destruction of the permanent improvements of the confiscated farms. This law of confiscation of rural lands is applicable to the whole of the national territory. On the other hand, expropriations carried out in application of the Agrarian Reform, although extending to the whole of the territory of the Republic, have been in the first instance applied to landowners of the provinces of Andalusia, Estremadura, Ciudad Real, Toledo, Albacete and Salamanca, which are the regions where the need for the Reform is most strongly felt. For the remaining 36 provinces the Reform can only be applied on the proposal of the Government and by means of a special law voted by the two Chambers. None the less, in these 36 provinces, the Law of Agrarian Reform will be applied immediately on State properties and on rural seignorial lands.

In accordance with Base 6 the following four classes of rural estates will be exempted from expropriation for purposes of the Reform :

1. communal lands belonging to the villages, stock routes, and large cattle grazing grounds utilised by the communes ;
2. lands given up to forest working ,
3. large pasture lands with scrub, untitled and waste land (*baldíos y eriales*) when 75 per cent. of the area does not admit of cultivation ;
4. lands which on account of their excellent farming or improvements may be considered as models of good cultivation alike from the technical and the economic standpoint.

These cases of exception will not apply to seignorial lands nor to forest workings, or large pasture estates (*dehesas*) and heathlands forming the fifth part, at least, of the area of the commune in which they are situated, nor to pasture estates (*dehesas*) leased and utilised jointly by a group of small stock-farmers.

Bases 7 and 8 deal with the question of compensation for lands expropriated. According to these, the Institute of Agrarian Reform, as the organ for the carrying of the Reform into effect, will proceed to the preparation of the inventory of the lands already indicated as subject to expropriation, and for this purpose a notice will be published in the official journals, inviting all owners of lands liable to expropriation to present, within thirty days, to the *Registro de la propiedad* (a duly authorised institution the object of which is to secure ownership (*dominio*) and the privileges derived from it) for the locality in which their lands are situated, a detailed report in regard to their lands, stating their position, area, boundaries, and other circumstances necessary for the ready identification of the estate that is to be expropriated.

A book will be kept at each of these offices in which will be entered the estates liable to expropriation, and each office will transmit monthly to the Institute of Agrarian Reform a copy of the entries.



Landowners omitting to submit within the thirty days period such declaration of their lands, or those owners who in submitting the declaration omit an estate or farm, will be subject to a fine equal to 20 per cent. of the value of the lands not declared or omitted from the declaration, such fine to be collected by the Institute of Agrarian Reform.

On the expiry of the period fixed, any person may denounce to the officers of the Registration offices the existence of expropriable lands purposely not declared by their owners. If the accuracy of this denunciation is proved, then the defaulting owner will be fined at the rate of the 20 per cent. already mentioned, half of which will go to the person denouncing.

The general inventory of lands subject to expropriation must be completed within one year.

The following procedure will be adopted for the valuation of lands subjected to expropriation and as to the form of compensation of the owners.

In the case of seigniorial lands or lands belonging to the grantees of Spain, compensation will be given corresponding to the value of improvements of actual utility which are not mortgaged. Individuals who by reason of the expropriation of seigniorial lands without compensation are left without the means of subsistence, will have the right to claim from the Institute of Agrarian Reform a maintenance pension which will be granted only provided they prove that they are entirely without any kind of property. In regard to the expropriation of lands belonging to the grantees of Spain, the Government, on the proposal of the Institute of Agrarian Reform, may grant such exceptions as are deemed suitable in recognition of eminent services rendered to the Nation.

The basis of the valuation of other estates is taken in reference to the assessment for the land tax made in the cadastral survey.

The rates for assessment of the capital value of these lands established by the Law are as follows:

5	per cent.	when the revenue is less than	15,000	pesetas.		
6	per cent.	when the revenue is between	15,000	and	30,000	pesetas
7	»	»	»	»	30,000	» 43,000 »
8	»	»	»	»	43,000	» 56,000 »
9	»	»	»	»	56,000	» 69,000 »
10	»	»	»	»	69,000	» 82,000 »
11	»	»	»	»	82,000	» 95,000 »
12	»	»	»	»	95,000	» 108,000 »
13	»	»	»	»	108,000	» 121,000 »
14	»	»	»	»	121,000	» 134,000 »
15	»	»	»	»	134,000	» 147,000 »
16	»	»	»	»	147,000	» 160,000 »
17	»	»	»	»	160,000	» 173,000 »
18	»	»	»	»	173,000	» 186,000 »
19	»	»	»	»	186,000	» 199,000 »
20	»	»	»	»	200,000	and upwards

Adequate compensation will be given for improvements which, under the provisions of the existing legislation, have not yet been entered on the cadastral survey. In addition the land owner will be reimbursed in respect of sums paid by him in virtue of the law making it obligatory for him to provide irrigation on lands requiring it.

The total of the expropriation will be paid, partly in cash and the remainder in bonds of the Agrarian Debt amortisable in fifty years, carrying a five per cent. interest of its nominal value.

The cash indemnity will be paid in accordance with the following scale :

Lands on which the return is not more than 15,000 pesetas 20 per cent.  
Lands the return on which is more than :

15,000 but does not exceed	30,000 pesetas . . . . .	15 per cent.
30,000       "       "	43,000       "       . . . . .	14       "
43,000       "       "	56,000       "       . . . . .	13       "
56,000       "       "	69,000       "       . . . . .	12       "
69,000       "       "	82,000       "       . . . . .	11       "
82,000       "       "	95,000       "       . . . . .	10       "
95,000       "       "	108,000       "       . . . . .	9       "
108,000       "       "	121,000       "       . . . . .	8       "
121,000       "       "	134,000       "       . . . . .	7       "
134,000       "       "	147,000       "       . . . . .	6       "
147,000       "       "	160,000       "       . . . . .	5       "
160,000       "       "	173,000       "       . . . . .	4       "
173,000       "       "	186,000       "       . . . . .	3       "
186,000       "       "	199,000       "       . . . . .	2       "
199,000       "       "	200,000       "       . . . . .	1       "

The holder of the bonds cannot dispose freely of more than 10 per cent. of their total value in each year beginning from the year in which the expropriation of the estate, compensated by means of these Agrarian Debt bonds, was effected. The remainder of the bonds cannot be transferred by means of transactions taking place between living persons, nor can distress be levied upon them.

If the landowners concerned are not prepared to agree to the valuation made of the lands, they have the right of recourse to the Institute of Agrarian Reform for the purpose of challenging the valuation. The Institute will decide in accordance with the scale of rates already indicated.

If the landed property coming under expropriation is mortgaged or otherwise burdened, any such charge is deducted from the valuation price and the amount due paid in cash to the third party. If the valuation price does not cover the charge, the difference is made up by the State.

So as to give immediate effect to the Reform, the Law allows the taking possession of certain estates that are subject to expropriation so soon as they

are placed upon the list for expropriation. In applying this measure, the nature of the crops is taken into account, so as to avoid any loss of the produce. Accordingly the State will take over the full working of the lands, will assign them to settlers who are landless, and will pay to the owner a rent of 4 per cent. of the value that has been fixed already, until such time as definitive realisation of the property has been effected.

On any such lands of which immediate possession has been taken by the State, all the expenses incurred by the owner will be paid, including the value of the crops to be gathered, the live and dead stock and any improvements in existence on the farm, the object being to avoid any interference with the proper farming of the land.

The preceding statement constitutes the most important part of the Law referring to the expropriated lands. Before passing on to an explanation of the position of the landworker and the advantages that are ensured to him by the Reform, a brief account may be given of the functions of the Provincial Agrarian Councils (*Juntas*), which consist of a President, appointed directly by the Institute of Agrarian Reform, and representatives of the landworkers and landowners in equal proportions, not exceeding four of each group.

The Provincial Inspector of Live Stock Hygiene and the provincial chiefs of the agricultural and forestry services also are members of these Councils, in the capacity of assessors, with the right to speak but not to vote.

The Provincial Councils will take possession of the lands which are subject to expropriation and assigned for apportionment, and will prepare the required certificate after duly notifying the owner. This certificate will indicate the position, the boundaries, the area of the estate and its most important characteristics from the standpoint of agriculture and forestry, such as the crops, the fences, etc. and the condition of all these, as also the position of the farm work and of the growing crops at the time of the taking of possession.

The certificate will be drawn up in triplicate. One copy will be handed to the owner, a second will be kept by the Provincial Council which will forward the third copy to the Institute of Agrarian Reform after having caused it to be entered on the Estate Register. No fee is charged for making this entry.

As soon as the lands that are to be expropriated have been indicated under the Law, and immediately on the constitution of the provincial *Juntas*, which, as has been shown, are the bodies with the function of giving effect under the jurisdiction of the Institute of Agrarian Reform to the Reform, distribution of the lands and assignment to the settlers will immediately be undertaken on the following lines: the Provincial *Juntas* will at once proceed to the establishment of the census of the landworkers who are to be settled within each communal area, such census list to indicate the name and first name, age, status and family circumstances of the persons concerned. This census will be divided into four groups as follows:

1. Farm workers and stockmen, strictly so called, that is farm hands, who are themselves landless;
2. Societies of farm workers, legally constituted, provided such societies have been already two years in existence at least;

3. Holders of small farms who pay less than 50 pesetas annually as land tax, on lands directly cultivated, or who pay in rent less than 25 pesetas for lands rented;

4. Rent-paying or share tenants who farm less than six hectares in the arid zones or one hectare of irrigated land.

As soon as the Census is prepared and the time for the establishment of the settlers has arrived, the determination of those to be settled on the land is taken on hand in accordance with the order previously arranged.

In each group preference is given to cultivators with the responsibility of a family and in this class priority will be assigned to families including the largest number of persons capable of working the land.

Notwithstanding this last provision, if it is a case of lands in the arid zones, preference will be given to workers' organisations which have made application for lands with a view to joint farming.

It is characteristic of the Reform, in fact, to give special recognition to landworkers' associations and organisations of the right to own and to farm the new holdings created by the Reform. This characteristic is the outcome of one of the features of the former system of landholding in Spain, namely, the *latifundia*, originating in the large areas of arid lands where individual farming was condemned to failure and where, with the aid of co-operation and State credit, associations of landworkers may be able to restore fertility to lands at present unproductive but likely in future to be a factor of importance in the national economy.

The provisions of the Law also prescribe that the Reform shall not be confined to a mere partition of the lands among some thousands of settlers, for individual or collective cultivation, but that more important objects shall be envisaged and that the purpose in view shall be to improve and transform cultivation in such a way as to increase the national agricultural wealth, without interfering with the interests of the actual holder of the land.

The expropriated lands are, as stated in Base 12, set aside for the following operations: parcelling and distribution among cultivators and associations of land workers, formation of new urban nuclei, and workers' gardens, consisting of a small house with kitchen garden attached. It is necessary to ensure that the lands thus assigned are really allocated to the purposes indicated, and that any clearing of lands unsuitable for a particular crop is prevented, while the cultivation of the products indicated by the climate and the type of soil is rendered compulsory. Endeavours should also be made that the important operations for which the individual economic resources are insufficient should be effected by joint cultivation; such operations include transformation of farming systems on a large scale and works of land reclamation.

Another part of the expropriated lands are set aside for reafforestation and the construction of reservoirs and other hydraulic works. It is considered that certain estates which would be very difficult to parcel out and could not be farmed to advantage, either by individuals or collectively, might constitute valuable forest centres.

Other expropriated lands will be set aside for formation of large estates of industrialised type, directly under State management, and intended for purposes of instruction, experiment or demonstration in agriculture or in stock-breeding, or for any other purpose of evident public utility. By this means the farm worker will enjoy the advantage of gaining an acquaintance with practical experiments and of obtaining farm machines which economise labour and effort and lower the cost of production. It is not only a question of good farming but of farming on the most economical lines possible, seeing that the factor of cost of production is one of the most important in agricultural economy. Again, apart from these large farms of industrial type, there would be no possibility either of diffusing practical instruction, or of carrying out trials and enquiries the results of which could be applied by the cultivators themselves when their soundness, utility and economy had been demonstrated.

Other expropriated lands will be utilised, by special concession, as large estates on which there must first of all be effected crop transformations or land improvements of such importance as to require the investment of capital such as is only possessed by powerful organisations having adequate technical and financial resources. A return will be obtained in this way from lands at the present time still unproductive, savings will find an adequate investment and work will be given to the technical staff directing the improvements and to a great number of workers who, later on, will be established on the improved lands.

Farmers' Clubs will be formed as centres of encouragement and stimulus for the cultivating class. In this way the farmers will become accustomed to the idea of establishing trial centres for collective farming.

Other lands will be granted to the former tenants in emphyteusis and with engagement to sell only with consent of the tenant, provided that such lands have been already rented for a certain number of years and are of a certain area.

The object of these measures is to put an end to latifundium and absenteeism and to enable all who work on the land to share directly in the wealth which they combine in creating.

In reference to the account already given of the situation of the rural population prior to the Law of Agrarian Reform, it may be stated that the tendency of the Law is to improve to a perceptible degree the economic and social condition of the mass of this population, so that the cultivator whose level of education, of welfare and hygiene has been thus raised may become the decisive factor in the accession of wealth in a country so eminently agricultural as Spain.

In view of the importance of instruction, credit and co-operation for the full development of agriculture, these factors could not be ignored in the Law of Agrarian Reform, especially as it was essential to create a number of small holders and in particular collective groups of cultivators who, without the economic and technical assistance of the State, would encounter obstacles rendering impossible all remunerative farming.

Base 23 of the Law of the Agrarian Reform provides that the Institute of Agrarian Reform shall give special attention to the establishment and en-

couragement of technical agricultural instruction. For this purpose it shall establish vocational schools, laboratories, experiment farms. It shall organise demonstration courses and tours and all other means calculated to diffuse the necessary information among cultivators so as to ensure better farming of the soil and the development of co-operation. It shall take account of the different regions and their access to consuming markets.

A very decided impulse is given in the direction of agricultural instruction by the Law of Agrarian Reform. It is recognised as essential to facilitate provision of economic resources in the form of credit, as well as of farm equipment and other requisites, through the medium of co-operation, and that it is still more essential to make provision for education and instruction so that a more enlightened use may be made of both credit and co-operation.

The training of practical and capable farmers, the modernisation of the cultural processes which must inevitably replace the earlier methods, formation in the farm worker of the habit of observation and reasoning, the knowledge of the advantages offered by grouping in syndicates or in co-operative societies, all these will be the practical results of the application of the provisions of the Law relating to instruction.

Bases 11 and 16 establishing collective farming of lands give scope within the Reform for a powerful movement of agricultural co-operation, in view of the fact that the farming of wide areas of land by a community of settlers will necessarily involve the advantages that would be offered by co-operation. The direct purchase of machines and equipment, fertilisers, seeds, etc., will be a condition imposed, and the settlers will avail themselves of their grouping in co-operative societies to obtain all possible advantages in the sale of their products, insurance of their crops, etc. The Law lays down clearly in Base 17 the obligatory character of the co-operation: "... The Institute of Agrarian Reform will promote the formation of co-operative societies among such communities of settlers brought into existence by the Law, the purposes of such co-operation being the following: purchase of machinery and implements, fertilisers, seeds, fungicides and insecticides; foodstuffs and stockfeeds; preservation and sale of products; obtaining of loans on the joint and several liability of the members of the associations, and in general all the operations by which animal or plant production can be improved in quantity and quality."

As regards the working of the co-operative societies, the Law of Agrarian Reform enacts that it shall be regulated by the legal provisions in force in respect of co-operation, which have been previously published in this Review (1).

The subject of agricultural credit also receives attention in the Law of Agrarian Reform and it will be noted that not only is the Institute endowed with an annual sum of 50 million pesetas, but that this central body is empowered to receive State advances, to effect financial operations, to issue mortgage bonds secured by the land that constitute its patrimony (*Base 3*); the Institute

(1) Regulation of Co-operation as an Economic and Social Institution in Spain. *Monthly Bulletin of Agricultural Economics and Sociology*, February 1932.

of Agrarian Reform " will also promote the formation of credit institutions, and will make use of those already in existence, in order to secure to the settlers the capital necessary for farming costs " (*Base 4*). All matters relating to agricultural credit, however, remain concentrated, according to the Law (*Base 25*) in the National Bank of Agricultural Credit which will be the financial organ and the treasury of the Institute of Agrarian Reform.

For the complete working of agricultural credit use will be made both of the centres recently formed and of those previously in existence, which were however closely linked with the National Bank and subordinate to it, inasmuch as it is from the National Bank that the credit benefits radiate as far as the most humble rural banks of the most distant agricultural centres. The new credit structure rests on the basis of the local agricultural credit institutions, *viz.*, deposit and loan banks, the *pósitos*, co-operative agricultural credit societies, credit sections of the syndicates and of co-operative societies the main function of which is the granting of individual loans on personal security at short term. On a superior level and closely linked with the local centres are the Regional Institutes of agricultural and provincial credit; regional savings banks and federations of *pósitos* and of syndicates and co-operative societies, the main function of which is to make loans to local institutions, loan on pledge and mortgage security to individuals both long term and intermediate, and loans to syndicates and co-operative societies.

At the top of the ladder is the National Bank of Agricultural Credit as an Institute of national agricultural credit with the function of making loans to regional institutions, of financing important farm improvement works, of establishing co-operative societies, of intervening in agricultural insurances, discounting of bills, issue of warrants on pledge of agricultural products, issue of bonds and debentures, etc.

It is the new organisation of credit which is regarded as the most appropriate for use in connection with the Reform, and it should be noted that although a close relation is established between the organisations of varying category, this relation does not imply dependence of one on another. On the contrary, the most complete independence and the fullest responsibility will be preserved in each institution especially in those local organisations which form the basis of the new structure.

From the wide scope of the problems involved and from the far reaching changes introduced into the land tenure system the accomplishment of the Agrarian Reform is equivalent to a legal revolution in Spanish agriculture.

It is perhaps on account of its complexity that the Spanish agrarian reform presents greater difficulty than the reforms that have been carried out in certain other countries of Europe in the post-war period. The majority of the States that have introduced an agrarian reform are countries with a climate which is for the most part uniform and possessing agricultural regions with well defined types of cultivation. With these nations, the problem presenting itself is that of

obtaining additional lands and a satisfactory grouping of parcels which will facilitate an increase in the area of holdings and in the number of family peasant holdings together with that of establishing as independent farmers the farm workers who formerly constituted a rural proletariat.

In Spain, however, the case was not the same. Apart from the landless workers, there are problems of a technical and economic order to be solved, such as that of the latifundium of certain zones and that of excessive parcellings in others, absolutely essential works of a hydraulic character, reafforestation as well as clearing operations on the great pasture estates (*dhesas*) in order to secure the extension of stockbreeding, and many other questions.

The Agrarian Reform is a great problem which has been confronted by the Republic in the full recognition that its solution implies the raising of the humble proletarian class of the country districts and the fulfilment of their aspirations towards betterment, as well as the triumph of the national economy which cannot support international competition so long as the agriculture which forms its basis has not undergone a far-reaching technical transformation.

E. MARTINEZ DE BUJANDA.

## ECONOMIC AND SOCIAL CONDITIONS OF THE AGRICULTURAL CLASSES

### State Assistance to Australian Wheat Growers.

Among the many remarkable features of the world crisis through which we are passing is the urgent need which has arisen in a number of countries for the provision of subsidies or other forms of assistance for the classes engaged in producing the prime necessities of existence whether for their own countrymen or for export to meet the requirements of other populations. The following is an attempt to outline the facts as regards the wheatgrowers of Australia. It remains to be seen whether there is any alternative method of assisting producers not involving, as these expedients must, the increase of the burden of taxation upon the consuming populations.

The wheat growing industry of Australia, largely under the stimulus of a campaign launched early in 1930 by the Governments of the wheat-growing States, reacted to the fall in world prices by an extension of cultivation at lower costs per unit, and it was confidently hoped at the time that in this way production costs then usually estimated at about 4s. 6d. per bushel could be so reduced as to make existing prices remunerative for the Australian grower and enable him to consolidate his position on the world market. The area sown in wheat was accordingly increased throughout Australia from 12,068,000 acres which was the average for the years 1923 to 1929 up to 18,285,400 acres for the season 1930-31.



The result was a corresponding increase in production from 138,000,000 bushels to 212,000,000 bushels. The growing period of this crop however coincided with a further fall in prices (the fall being from 39s. 5d. per quarter of 480 lbs. in June 1930 to 25s. 6d. at the end of December) so that by harvest time it was abundantly clear that even the growers who by good fortune or good management had obtained heavy yields would secure less than the hoped for returns, while those whose crops were poor, whether owing to weather conditions or because in over-confidence they had extended cultivation to lands not suited for wheat growing, must inevitably experience losses ranging from severe to disastrous and even crushing.

The situation was regarded on all hands as serious, and in February 1931 the proposal was made by the Federal Government for raising a loan of £6,000,000 for the purpose of (a) paying a bounty of 6d. (later fixed at 4½d. per bushel), on wheat exported of the 1930-31 crop, and (b) advancing a total of £2,500,000 to the State Governments for the benefit of necessitous growers. Owing to considerable want of agreement the bounty proposals were abandoned in regard to the 1930-31 crop, although a sum of £3,000,000 was set aside for the purpose by the Commonwealth Bank Board to be used under certain conditions of overseas parity of wheat.

As regards assistance to necessitous growers, the £2,000,000 was made available, in pursuance of a policy initiated in January 1930 under the Government Guarantee Act, in the form of loans given in the different States through Farmers' Relief Boards and similar bodies.

During 1931, oversea prices continued on the whole to fall till in September the disastrous price of 19s. a quarter, or 2s. 4½d. a bushel was touched.

In October 1931, accordingly, a Conference took place between the Ministers of Agriculture of the wheat-growing States of the Commonwealth and the growers' organisations, and it was decided that the £3,000,000 should be used for paying a premium of 6d. per bushel on all wheat of the 1931-32 season exported or used for local consumption. However although a bill to this effect was introduced and passed the House of Representatives, there was disagreement in the Senate as to the machinery for distribution of this premium or bounty. The measure was finally dropped, mainly because of a complication arising from an unexpected advance in the oversea price of wheat.

The original condition in fact under which the Commonwealth Bank Board had undertaken to render available the £3,000,000 was that the bounty would be used to raise the f. o. b. price to 3s. a bushel. During the progress of the measure and as a consequence of the departure of Great Britain from the gold standard, the oversea price of wheat advanced from 2s. 6d. to 3s., thereby nullifying the condition. After the abandonment of the bill, however, further negotiations took place between the Bank Board and the growers, and the Board finally agreed to a bounty of 4½d. per bushel on all Australian wheat of the 1931-32 season sold or delivered for sale prior to 31 October 1932, irrespective of the selling price (1).

(1) For the season 1931-32 there was a reduction as compared with the previous season alike in area sown and in production. See Table III.

The claims, which had to be presented by grower and buyer, or receiver, on prescribed forms, were dealt with by the State Departments of Markets and the Federal Department of Commerce. Later for reasons of departmental convenience submission of claims by 15 August was requested, so that the following returns published early in August by the Federal Department of Commerce of claims received and dealt with may be taken as practically a complete statement for the year.

TABLE I. — *Payment of Federal Wheat Bounty.*

(Claims received and dealt with by the Federal Department of Commerce up to 4 August 1932).

STATES	Number of Claims received	Number of Claims passed for payment	Amount paid £
New South Wales . . . . .	36,848	35,790	929,874
Victoria . . . . .	35,917	32,339	794,512
South Australia . . . . .	13,555	42,135	845,606
Western Australia . . . . .	22,241	21,179	699,011
Queensland . . . . .	3,060	3,060	64,308
Tasmania . . . . .	431	338	1,864
	141,155	136,193	3,335,255

The total amount given in a later return published in November indicates an increase only to £3,342,325 and in the same return the number of individual growers submitting claims is given as 70,942. It is also stated that claims not exceeding £75, or up to 4000 bushels, numbered 57,019, and amounted to £1,494,831, or rather less than half the total amount paid.

By this time the question occupying the minds of the growers was that of securing remunerative returns on the 1932-33 crop shortly to be harvested. The oversea price, which had shown so encouraging a rise in the months following the abandonment of the gold standard, had since May 1932 tended to fall again and during October touched 26s. per quarter or 3s. 3d. a bushel, the price on the farm being of course lower. Costs of production, although varying in different areas, are undoubtedly higher in Australia than in the other great wheat producing countries owing to the high land values and high tariffs on farm equipment, and it is the general opinion among growers that it has proved impracticable to reduce costs below, at least, 3s. 6d. a bushel. In these circumstances it is perhaps hardly surprising that the decision taken early in November 1932 by the Federal Government against granting any direct bounty on the coming crop was received by the growers in the wheat-growing States with a storm of protest. The actual proposals of the Government were for a sum of £1,000,000 to be expended in the form of a subsidy of £1 per ton on all superphosphate purchased and held between the date of the passing of the

Bill and 30 June 1933. At the same time the sum voted for the relief of farmers suffering the greatest hardships was reduced to £1,250,000 only. These proposals were considered by the growers as useless or at least quite inadequate; meetings of protest were held and urgent telegrams despatched to Parliament. A "March of growers" on Canberra was even suggested as a method of impressing the Federal Government with the strength of the farmers' demand for direct assistance. The subsidy on superphosphate fertiliser (which had a parallel in the special credits for purchases of fertilisers arranged in 1931 for dairy farmers by the New Zealand Government) was the subject of particular criticism, it being contended that in wheat growing many other items of expenditure in connection with cropping are of equal importance with that on fertilisers. When it was learnt that the subsidy was to be paid to the fertiliser company and not to the farmer purchaser, the plan was further, although groundlessly, regarded as merely a means of helping vested interests. In Western Australia the refusal of the Federal Government to consider "straight-out" bounties, *i.e.*, bounties on the product made direct to the grower, was met by an extensive hold up of wheat deliveries at country stations, organised by the Wheatgrowers' Union.

At the same time there can be little doubt that the Federal Government had good grounds for the attitude adopted. To quote the words of the Prime Minister of the Commonwealth, when outlining the decision: "The Government is of opinion that the bounty on production of last year cannot be justified. The position in the payment of the bounty is that the higher the yield and the better the conditions under which the grower is working the more he benefits, while the farmer who is working under a disadvantage reaps the smallest benefit from the bounty." It is of interest that this is exactly the objection that was raised in the Senate in discussion of the 1931 measure, and an amendment was at that time proposed to the effect that the bounty should be paid on the basis of acres sown rather than on that of bushel sold, the intention being to benefit all growers alike. It will be seen that this was in fact the basis subsequently adopted although not precisely as a Federal measure.

Under pressure of political opposition joined with that of the growers the original proposal was modified. The Farmers' Relief Bill was amended, and as eventually passed made available a sum of £2,000,000 out of revenue for distribution among wheatgrowers, together with a sum of £250,000 for the assistance of primary products other than wheat. This latter assistance takes the form of a rebate of 15s. per ton for each complete ton of artificial manure used for top-dressing pastures, etc., during the twelve months ending 30 November 1933. It will be seen that this grant takes the place of the superphosphate subsidy declared by the wheatgrowers to be practically useless to them, transferring the assistance to other producers. On the other hand the distribution of the two millions to the wheat growers is left to the discretion of the State Governments, with the sole proviso that it may not be used as a bounty, *i.e.*, not as a payment on the quantity produced made to the grower.

The amounts distributed to the individual States were as follows: to New South Wales, £570,902; to Victoria, £442,421; to South Australia, £507,138; to Western Australia, £436,145; to Tasmania, £2,342. In addition in New

South Wales the Commonwealth grant is supplemented by a grant made from the funds of the Flour Acquisition Act of 1931, to the amount of £300,000.

The distribution of the funds is being effected in the different States as follows:

In New South Wales, out of the total of about £871,000 available, £745,000 is to be distributed upon the basis of area sown for grain, (*i.e.*, excluding areas under wheat grown for hay), the allowance being at the rate of 4s. an acre for areas of less than 250 acres, reducing by steps to 3s. an acre for areas exceeding 550 acres. The balance is applied in the form of a reduction in rail freight on wheat marketed or delivered for market, the rebate amounting to a halfpenny a bushel.

In Victoria it is intended to distribute the whole amount of £442,421 on the basis of area sown for grain. The payment per acre will be made on a flat rate so soon as all claims are received, and it is considered that the approximate rate will be 2s. 6d. an acre. A proposal for supplementing the Federal grant by the proceeds of a tax on flour was defeated in the State Legislative Assembly.

In South Australia the State Bank made an immediate preliminary payment of 1s. 6d. per acre of wheat sown to all approved applicants, the intention being to make further payments when all claims had been received and the total acreage known. On the other hand, £40,000 is definitely set aside for special grants to farmers whose 1932-33 crop yield was less than 3 bushels an acre, or was unmarketable.

In Western Australia it was decided to make an interim payment of 1s. 6d. per acre for farmers in immediate need of money, the balance to be paid when the total acreage for which claims are made is ascertained. As in Victoria, a proposal by the Ministry to supplement the Federal grant by funds raised by a State tax on flour was defeated.

The principle of a grant in relief per acre sown has thus been adopted in the wheat growing States. The freight allowance arranged in New South Wales, however, is equivalent to a grant on a basis of production of marketable wheat, *i. e.*, in some sense a bounty; but it will be noted that this allowance is being met out of the supplementary fund assigned by the State Government. According to an estimate made in January 1933, the acreage allowance in New South Wales will amount to £745,000 and the freight allowance will cost £125,000.

Some clearer understanding of a situation which is undoubtedly fraught with perplexity may be gained from a study of the following tables showing the course of prices of Australian wheat over the period 1930-32, and the figures for the area under wheat and quantities of wheat produced over the same period as compared with an average of preceding years. The reduction in area sown for 1931-32 is perhaps significant as following on the abandonment of the bounty proposals in February 1931, while the granting of a bounty at a later stage on this crop seems to have encouraged growers to anticipate a continuance of the same policy and hence to increase their sowings for 1932-33. It may perhaps be added that the combination of wheat and sheep farming is being adopted in some districts and is regarded as offering possibilities of more remuner-

ative returns, at least for small growers, than can be obtained from wheatgrowing alone.

TABLE II. — *Monthly Average Prices in Liverpool or London of Australian Wheat (1930)*

(in shillings and pence per quarter of 480 lbs. or 8 bushels)

	1930	1931	1932	1933
January . . . . .	46/9	22/11	27/3	24/7 (new crop)
February . . . . .	41/7	21/10	27/11	23/10
March . . . . .	39/4	21/4	27/11	---
April . . . . .	40/7	21/10	27/2	---
May . . . . .	40/8	23/8	27/1	---
June . . . . .	39/5	22/7	25/3	---
July . . . . .	36/5	21/5	24/5	---
August . . . . .	36/8	19/6	27/7	---
September . . . . .	31/7	19/2	28/9	---
October . . . . .	29/2	25/8	26/11	---
November . . . . .	27/8	29/8	26/0	---
December . . . . .	26/7	28/6	24/3	---

TABLE III. — *Area under Wheat and Crop Production in Australia.*

Average	Area acres	Production bushels	Yield per acre in bushels
1928-29 . . . .	12,068,000	138,000,000	
1930-31 . . . .	18,164,920 (revised figs.)	213,594,391 (revised figs.)	11.76
1931-32 . . . .	14,724,830 " "	186,652,654 " "	12.88
1932-33 . . . .	15,585,000 (est.)	200,000,000 (est.)	

C. H.

## INSURANCE

### Forms of Agricultural Insurance in Tunisia.

Live stock insurance does not exist in Tunisia. Hail insurance and fire insurance are effected chiefly by the agricultural co-operative insurance associations working at the present time in accordance with the Beylical Decree of 26 March 1931 (1).

(1) The complete text of this Decree appears in the Bulletin No. 145 of the second quarter of 1931 published by the Department of Agriculture, Trade and Colonisation.

The local associations are formed to the number of one to each civil administrative area. They are affiliated to a regional association the headquarters of which is in Tunis, and this in turn is re-insured at the Central Reinsurance Association of Agricultural Co-operative Societies of North Africa at Algiers.

The following are the rules governing the formation, organisation and working of the societies in question.

Agricultural co-operative insurance societies or associations under unpaid management and administration, formed without any view to profit and not in fact making any profits, may be freely established without the authorisation of the Government being required, and are not subject to the formalities prescribed for the constitution of insurance societies. Such bodies are public bodies and can sue and be sued.

Under the designation of agricultural co-operative insurance associations are included the societies the object of which is to effect insurance against agricultural risks of all kinds, and in particular risks of hail, fire, live stock mortality, accidents, frost and other weather risks. The law provides that a distinct society must be formed for every class of risk.

The terms of constitution of the local associations state the purpose, the duration, the headquarters and the title of the society and further define the area of its operations, the nature of the risks for which insurance is effected, the methods of constitution, administration, control, dissolution, and liquidation of the society; the system followed in establishing the rates of insurance, the collection of contributions and entrance fees, settling and payment of claims, and general conditions of insurance which must be the same for all the local associations affiliated to the same regional association. The dates of opening and closing the financial year are fixed by the same means. A claim is taken as belonging to the financial year in which it was originally made, not to that in which it was settled. The terms of constitution also fix the method of establishing receipts and expenditure as well as the method of constitution and administration of the foundation capital and of administration of the guarantee and reserve funds.

Membership of the local societies within the limits of the local administrative area, and on condition of submission to the formalities prescribed by the rules, is open to (a) farmers or rural landowners, (b) agricultural co-operative societies regulated by Decree of 4 July 1907, co-operative agricultural credit associations constituted in accordance with the Decree of 25 May 1905, co-operative agricultural insurance associations under the provisions of the present Decree, water supply associations coming under the Decree of 20 May 1920, which mainly related to agricultural production or the transformation and sale of agricultural products, (c) rural artisans not employing more than two workmen regularly, such as: *faïriers*, blacksmiths, wheelwrights, repairers of machines, tools, implements, or of farm buildings, barrel and cask makers, etc.

The administration or management of the agricultural co-operative insurance associations must be in the hands of persons of French or Tunisian citizenship, and no fees or other forms of remuneration are payable in respect

of such management or administration. A paid secretary-treasurer may however be appointed apart from the Council of Administration.

The local co-operative agricultural insurance associations can only be constituted and carry on operations on the condition that they have a membership of seven persons at least, and that at least two of them have formed a regional association for reinsurance of the risks provided for under their rules.

The social capital of the local associations cannot be formed by subscription of shares. It is built up from the entrance fees of members, the contributions of insured persons, grants or subsidies from the State and from agricultural associations, in particular agricultural co-operative credit associations, gifts and bequests made by private persons and the abovementioned associations, interest on funds invested, rebates received or shares taken in the risks by the reinsuring associations.

The insurance contributions are fixed and do not involve any liability on the insured person. Receipts from members are devoted to payment of costs of management, reinsurance premiums, compensation paid on claims and other expenditure. The annual excess of receipts over payments is paid into a reserve fund. When the reserves provided for in the statutes are reached, rebates may be made to members in the form of reduction of premiums.

Every local association is obliged to undertake a share in the risks insured. This share is at least one twentieth of the share undertaken by the regional reinsurance association, but it may be increased in proportion as the reserves increase. The surplus of the risks must be compulsorily reinsured with the regional association. Moreover in regard to accidents occurring during work, the local associations are expected to reinsure in full cases of death or permanent disability. No local association may withdraw from the reinsurance association to which it belongs before the expiry of the engagement prescribed in the reinsurance contract. It must repay to the reinsurance association any advances received as well as the share of the risks which fell on it, but which it will have paid or might have had to pay on its release from the engagement entered upon.

In the event of dissolution of a local society, the assets after settlement of accounts will be paid over to an agricultural co-operative insurance association or to an undertaking of general agricultural interest designated by the General Assembly subject to the approval of the Administration. In no case can the assets be divided among the members.

The Law of 26 March 1931 contains provisions relating to the declarations that must be made to the competent authorities as regards the rules, the persons administering or managing the affairs of the societies, as well as the receipts and expenditure and operations effected by them.

The administrative area of the reinsurance associations is fixed by their rules, and they are regulated by the same provisions as those applying to the local associations in regard to the rules, the declarations which have to be presented to the competent authorities the persons administering or managing the affairs. It should be noted that these associations may maintain a

paid staff on condition that the members of the staff have no vote on the Council of Administration.

Any society constituted in accordance with the provisions of the law of 26 March 1931, and observing the conditions and formalities prescribed by the rules must be accepted by the reinsurance associations for affiliation. The rules of the reinsurance associations fix the period for which the local associations are affiliated, which may not be less than five years, the conditions under which the reinsurance associations take a share in the losses sustained by the local affiliated associations, and the total of the reserve fund that must exist before rebates in the form of reduction of premiums can be allocated out of excess receipts to affiliated associations.

The purpose of the regional associations is to guarantee the payment of the share of risk falling on the local associations affiliated to them, in the event of the resources of the local associations proving insufficient, and also to effect reinsurance for each local association of a proportional share of their risks and of their excess receipts, and to reinsure a part of these with a Central Co-operative Association, either Tunisian, Algerian or French. The regional associations have the right of verifying at any time the book-keeping of the local associations affiliated to them and of pronouncing their exclusion in the event of their refusing to allow inspection or for serious irregularity in working, with the proviso that engagements in course at the time of exclusion are to be carried out. In the event of dissolution of a regional association, the assets, after settlement of the accounts, must be distributed among the local associations in the proportion of the premiums received during the five last years.

The Central Co-operative Reinsurance Association must guarantee the payment of the share of the risks falling on the regional associations, in the event of the resources of these latter proving insufficient. If the Central Association is Tunisian, it may retain a 50 per cent. share in the risks assured by the regional associations, reducing or increasing this share however according to the extent of its reserves. For the surplus risks, the Central Association must effect obligatory reinsurance with a Central association in Algeria or in France or with a joint stock company. In the event of dissolution of the Central Association its assets must be distributed, after settlement of accounts, among the regional associations in the proportion of the premiums received during the five last years.

The agricultural co-operative societies may receive Government grants under the conditions fixed by the Decrees of 1 February 1922 and 4 February 1925, and within the limits of a maximum of 100,000 francs per year coming from the fund for co-operation. Every application for a grant must state precisely the position of the regional and local associations at the time of the application and must be supported by all necessary justifying reasons.

In the event of dissolution of a local association subsidised by the State, the share in the net assets of the society coming from the State grants is paid over to the reinsurance association to which the society was affiliated, or in default of this to an agricultural insurance co-operative association to be named by the society itself subject to the approval of the administration.



The surplus is paid over, as already stated, to an agricultural insurance co-operative association or an undertaking of general agricultural interest designated by the general meeting subject to the approval of the administration. In no case may the surplus be divided among the members of the society.

In the event of the dissolution of a reinsurance association of the first degree, the share of the net assets of the society coming from State grants is paid over to an institution of agricultural co-operation designated by the general meeting of the said association subject to the approval of the administration. This approval will however be provisionally accorded for a period of two years reckoned from the dissolution of the reinsurance association of the first degree, and if a new reinsurance association is formed within the same area during this period the administration is empowered to order the partial or total repayment without interest to the new reinsurance association from the reserve fund coming from the State grants.

The destination of the net assets of reinsurance societies of the second degree, coming from State grants, is in the case of dissolution regulated by decision of the Director General of Agriculture, Trade and Colonisation and by that of the Director General of Finances. The surplus of the net assets of the reinsurance societies of the first degree is distributed, after settlement of accounts, among the local associations in proportion to the premiums received during the last five years, and the surplus assets of the reinsurance associations of the second degree is distributed under the same conditions among the regional associations belonging to them.

The Beylical Decree of 26 March 1931 takes note of the Decrees of the President of the French Republic of 2 August 1923 and 26 January 1930 relating to the constitution and working of the agricultural co-operative insurance societies applying for State grants, and in addition contains provisions relating to the deposits of the unappropriated funds of these societies and the investment of the reserves. In accordance with the same Decree, the associations for agricultural co-operative insurances and reinsurances are exempt from stamp duty and registration fees.

On the request of the Department of Finances of the Regency, the Tunisian Meteorological Service has established for a period of 10 years (1921-30) a return of the hailstorms that have occurred within the Regency. The tables containing the data in question are drawn up by administrative area and by the month.

This information was required in view of its bearing on hail insurance.

The Bulletin of the Department of Agriculture, Trade and Colonisation which has published these figures (1) adds the remark that there is only one means of protection against hail and that is insurance.

Actually use has been made of several methods of procedure which have proved practically ineffective against hail: rockets, cannon, electric "Niagaras". As the Bulletin states, hail is formed in the course of a storm. Now storms, in Tunisia, are usually linked with certain atmospheric conditions. For hail

(1) Tunis No. 149. Second quarter of 1932, p. 235 et seqq.

*Hail*

YEARS	NUMBER OF POLICES	VALUES ASSURED	DISTRIBUTION OF CONTRIBUTIONS PAID IN			GRANTS		RECEIPTS AND REBATES RECEIVED	
			Local associations	Regional association	Reinsuring bodies	Local associations	Regional association	Local associations	Regional association
1921 .	518	47,828,184	15,325 87	61,363 21	370,287 32	600 —	10,400 —	—	1,447.48
1922 . . .	478	29,016,341	13,121 29	52,485.65	211,655.75	2,600 —	12,400 —	—	42,522.27
1923 .	668	56,933,140	59,631 02	238,524.64	298,155.64	5,000 —	20,000 —	36,332.01	45,415.97
1924 . .	498	46,339,835	38,159.14	152,634 96	190,793 72	5,000 —	20,000 —	11,086 60	28,258.18
1925 . .	576	71,000,282	60,924.86	213,699 46	304,624.32	5,000 —	20,000 —	5,319 19	51,712.79
1926 . . .	566	41,734,691	67,375 65	269,512 63	336,888.28	—	25,000 —	16,622 37	80,191 38
1927 . . .	580	91,678,302	64,412.82	257,698.51	322,111.67	—	25,000 —	9,661 92	66,406 8
1928 . . .	934	167,128,532	17,211 67	152,148.601	646,708 57	—	25,000 —	73,396 —	105,406 10
1929 . . .	1,098	165,396,990	20,496 49	161,468 171	621,825 51	—	25,000 —	73,697.42	153,273 33
1930 . . .	1,055	147,167,103	18,437.77	165,939.95	896,189 53	—	25,000 —	60,641 88	134,428 45

*Fire*

YEARS	NUMBER OF POLICES	VALUES ASSURED	DISTRIBUTION OF CONTRIBUTIONS PAID IN			GRANTS		RECEIPTS AND REBATES RECEIVED	
			Local associations	Regional association	Reinsuring bodies	Local associations	Regional association	Local associations	Regional association
1921 . . .	1,140	78,824,053	7,243 05	14,486 12	375,836 22	3,333 —	6,667 —	—	16,826.42
1922 . . .	1,128	67,386,247	15,087.88	30,174 14	248,815 36	3,333 —	31,667 —	—	57,578.78
1923 . . .	1,532	97,751,061	14,839 64	183,140 69	227,971 32	5,000 —	20,000 —	8,229.22	28,961.56
1924 . . .	1,300	100,408,820	45,641 68	182,566 75	228,208 44	5,000 —	20,000 —	10,868.60	47,912.51
1925 . . .	1,486	148,097,250	71,069 70	281,278 97	355,348 67	5,000 —	20,000 —	23,778 —	83,422.20
1926 . . .	1,680	199,201,242	97,369.93	389,480 50	486,850 13	—	25,000 —	15,329.22	75,318.71
1927 . . .	2,026	240,604,659	101,221 14	416,884 50	521,105 73	—	25,000 —	15,633.12	88,688.67
1928 . . . .	2,686	330,610,510	29,247 20	263,215.841	296,977 47	—	25,000 —	53,133 —	140,735 —
1929 . . . .	2,967	313,963,051	36,382 91	327,446 251	429,555.84	—	25,000 —	117,742.09	21,386.61
1930 . . . . .	3,042	482,471,980	35,633 70	320,703 311	262,094 27	—	25,000 —	53,216.95	190,948.53
1931 . . . . .	2,913	377,418,527	76,451.41	467,086 571	393,482.21	—	—	169,199.01	280,045.81

*Hail*

CLAIMS DISTRIBUTION OF COMPENSATION PAYMENTS				DISTRIBUTION OF COSTS OF CLAIM			DEFICIT of the local associations	SUNDY GENERAL EXPENSES AND REBATES MADE TO insured persons	
NUMBER	Local associations	Regional association	Reinsuring bodies	Local associations	Regional association	Reinsuring bodies		Local associations	Regional association
40	22,343.76	89,374.91	464,531.25	23,752.41	46,926.12	—	13,519.08	—	—
18	3,484.50	13,948.08	35,102.77	332.32	24,062.49	—	—	—	—
27	17,425.62	69,702.51	87,128.14	563.48	2,290.66	2,854.05	—	31,637.66	53,855.25
14	8,789.60	35,158.48	43,948.02	285.93	1,143.72	1,429.65	—	19,079.37	26,988.60
7	2,101.61	8,415.44	10,525.05	284.92	1,139.65	1,424.60	—	34,351.44	73,377.54
28	21,870.68	87,182.74	109,353.43	608.64	2,434.59	3,043.22	—	37,158.17	82,025.99
60	118,697.61	471,790.47	593,488.07	2,219.69	8,878.79	11,098.48	60,372.80	34,802.12	69,866.55
46	6,039.15	59,752.43	153,526.96	675.99	6,145.91	15,602.65	—	64,155.86	86,030.41
97	17,566.32	158,006.91	753,445.32	1,820.88	16,459. —	53,894.92	—	67,067.92	131,052.92
38	6,003.07	51,027.70	222,841.58	772.49	6,952.42	23,803.64	—	65,095.95	137,937.13

CLAIMS DISTRIBUTION OF COMPENSATION PAYMENTS				DISTRIBUTION OF COSTS OF CLAIM			DEFICIT of the local associations	SUNDY GENERAL EXPENSES AND REBATES MADE TO insured persons	
NUMBER	Local associations	Regional association	Reinsuring bodies	Local associations	Regional association	Reinsuring bodies		Local associations	Regional association
—	13,922.09	27,843.85	325,553.83	20,569.88	12,588.99	—	—	—	—
21	4,747.65	9,495.29	90,803.95	1,056.13	22,231.02	—	—	—	—
14	28,838.24	116,755.41	146,194.26	1,217.15	4,865.73	6,085.58	—	24,119.41	22,602.37
22	18,371.68	75,534.92	93,906.60	500.50	2,181.99	2,682.49	—	22,820.80	24,218.80
45	74,432.35	297,729.42	372,161.77	2,271. —	9,084.04	11,355.05	23,778.97	39,637.60	35,003.36
38	69,392.15	277,568.72	346,960.87	1,902.20	7,608.84	9,511.04	7,264.05	57,168.57	48,404.94
46	42,962.69	171,850.80	214,813.49	2,670.66	10,682.64	13,353.30	—	60,044.86	73,790.28
75	17,235.41	155,297.30	964,168.12	1,210.52	10,894.68	47,137.06	—	89,291.76	93,133.86
57	12,941.47	116,473.32	669,518.53	1,302.78	11,725.12	46,692.48	—	97,601.90	121,873.95
73	21,194.19	190,747.73	776,170.80	1,688.02	15,192.10	51,314.47	—	68,251.68	154,866.02
46	17,474.28	100,883.12	326,777.71	1,426.44	9,572.50	27,068.30	—	102,170.16	219,189.94

to be formed the summit of the storm cumulo-nimbus must attain a height of from 10 to 12 kilometres and the base of these clouds must be 1,500 metres in length. The ice flakes of the high altitudes are seized on by whirlwinds, then they take the form of hailstones and as soon as they are large enough to withstand the force of the wind, they fall to the ground. The whole phenomenon is contained within a volume of about 100 square metres of area by about 10 kilometres in height. It will readily be seen that rockets and cannon, which cannot affect more than some hundreds of cubic metres, will be practically ineffective. As to the Niagaras, or lightening conductors of immense size devised some twenty years ago, they proved to be useless.

The Bulletin draws the attention of readers to the necessity of basing insurance rates on carefully prepared statistics to ensure the effectiveness of insurance. The information which has been employed so far for the establishment of the tables in question had been collected with a purely climatological purpose. If they are to be of value from the point of view of insurance they must be completed, as is stated in the Bulletin, by the valuation of damages. With a view to rendering possible the scientific determination of the rates of insurance premiums to be charged, the information should be supplied by the inspectors and officials of the Department of Agriculture.

Two tables are shown relating, the one to co-operative insurance against hail from 1921 to 1930, and the other, to co-operative insurance against fire from 1921 to 1931.

F. A

## BIBLIOGRAPHY ON ECONOMIC AND SOCIAL QUESTIONS

RUSSELL, Sir E. John. *The Farm and the Nation*. London, 1933. George Allen and Unwin, Ltd. 240 pp. Price 7s 6d.

[In "The Farm and the Nation", Sir John Russell endeavours to supply in an easily readable form the essential facts on which any land or agricultural policy for the United Kingdom must be based. A delightful chapter is devoted to a description of the varied agricultural regions of Great Britain, their different farming systems and the problems that confront them in the present crisis. "No country in the world," says Sir John Russell, "has such wide variations of soil and climate compacted into so narrow a range as Great Britain. In consequence British agriculture is exceedingly varied. An intelligent person familiar with one region could probably suggest some simple way of improving the fortunes of the farmers and farm workers in that area, but he would probably find on further enquiry that the suggested method would be no use in some other region and might even make matters worse."

The different agricultural countries of the British Empire are also passed in review and their possible contributions to the food supply of the United Kingdom are discussed.

Dealing with the problem of the best use to which the land can be put in Great Britain, the author poses the preliminary question: What should be the purpose of British Agriculture? "We have," he says, "the choice of three things:

"(1) We can aim at growing more food for the nation;

" (2) At giving bigger wages and bigger profits for the people who are working on the land and so inducing them to do better;

" (3) At settling a larger population on the land.

" These three purposes are quite distinct ; one could aim at any one of them with some chances of success, but to aim at all three probably means missing them all."

A striking illustration of the incompatibility of the two last aims is given. A farm of 909 acres of arable land in Norfolk was worked until 1928 on the old system, and employed 40 men. It was then thoroughly mechanised and the number of men employed was reduced to four. On the old system the lowest price at which wheat could be sold at a profit was 10s per cwt.; on the mechanised system, 6s. per cwt. But what became of the 36 men displaced by the machines? At the time the book was written 10 had obtained other work; 13 were working on relief works; 9 were unemployed or doing uncertain and temporary work, and 3 of these were drawing old-age pensions; 2 were rat-catching and "keeping"; 2 were dead. The ten men who had obtained other work were the only ones who were satisfactorily placed; the remaining 24 were definitely worse off than before and in addition were costing the community between £1,200 and £1,500 a year for their maintenance.

According to the purpose which is chosen, there are various ways of dealing with British agriculture. Sir John Russell urges that the decision should be taken quickly and definitely, as the problem will only grow worse by delay. The same choice lies before other countries and in all countries those who are called upon to frame agricultural policy will have something to learn from Sir John Russell's authoritative statement of the problem as it affects Great Britain.

J. K. M.

Handbuch der Rationalisierung Herausgegeben vom Reichskuratorium für Wirtschaftlichkeit, Bearbeitet unter Mitwirkung zahlreicher Körperschaften und Fachleute von Dr. F. Reuter. Berlin, Wien, 1932. Industrieverlag Spaeth und Linde, S. 1327.

[The *Reichskuratorium für Wirtschaftlichkeit*, the Central Office for the movement for rationalisation of work in Germany, has just published a volume dealing with the subject of the scientific organisation of production processes in almost all branches of economic activity. In spite of the voluminous character of this work which extends to no less than 1300 pages, it has already in two years reached its third edition. The utility, even the necessity, for such a work is accordingly clear. This is the more remarkable as the publication coincides with the continued general economic crisis, which is considered in certain circles to be a direct consequence of the rationalisation movement.

It appears however that rationalisation, as a method of production and a principle of work which in accordance with the logic of economics makes possible better and cheaper production, ought not to be considered as a social evil. It is by no means easy to establish an absolute interdependence as to causes and consequences between rationalisation and the economic crisis.

It is well known that towards the beginning of the capitalist regime, after the Napoleonic war, a general crisis occurred in 1815, followed by another in 1825, and that there has been in fact a succession of crises throughout the whole century since that time. If it is decided to regard rationalisation, whether technical, psycho-physiological or economic in the general sense, as the underlying cause of all these crises, then the question arises, as to where the final objective of the steady economic progress of society is to be sought.

The rationalisation movement may well give rise to economic disorder, unemployment, etc., but not as such, and only as the consequence of its too hasty application

or introduction at the moment when the life of nations is already affected by economic trouble. In the national economy taken as whole as well as in each enterprise considered in isolation, various factors are at work which, if they are to form an harmonious social whole and to give an optimum return, must be in the right proportion mutually. If the rationalisation factor is perpetually being raised to a higher degree the other production factors must be at the same time raised to a corresponding level or the whole structure of the enterprise will be endangered.

Taking a survey of the world production of these last years, it will be noted that the production of raw materials in 1925 was 25 per cent. higher than in 1913 and that of articles of diet 10 per cent. higher. This increase has continued and in 1929 the increases relatively to 1925 were 20 per cent. and 5 per cent (*The World Economic Survey*, League of Nations, p. 25, Geneva, 1932). In 1925 unemployment began to be severe and in that year nearly five million persons were affected (p. 272-3). From that time onwards there has been a continuous increase in unemployment up to the figure, never before reached in economic history, of 30 million persons. In spite of this the hours of daily work of the workers has remained the same, although this is not justified by economic foresight and considerations of social interest. In place of reducing the hours of labour in accordance with the Washington Convention of 1919 and thereby enlarging the possibilities, for an increasing number of workers, of sharing in the production, the principle of "laissez-faire" has been taken as a guide, with the consequences which are a matter of common knowledge. Sufficient attention has not been given to the social aspects and the full importance these possess in economic life has not been assigned to them.

If the Washington Convention of eight hours work had been ratified by all the States unconditionally in advance instead of being applied empirically and sporadically, it is perhaps doubtful if we should be now confronted with this rising tide of unemployment and with the necessity of discussing the proposal of the 40 hours week in industry and in agriculture which was the proposal brought before the International Triple Conference of January 1933. This proposal is primarily social in character, as were the other post-war agrarian reforms.

The object of the transformation of large holdings into small family holdings was certainly not to increase agricultural production, but rather to emphasise the principle of social justice towards the large mass of country dwellers who had fought in the name of the homeland. It was a moral postulate as well as an absolute essential to social peace.

The First International Economic Conference declared itself for a judicious application of rationalisation: "It is considered" to quote the reports, "that the application must be carried out with all necessary foresight so as not to injure the legitimate interests of the workers, and that, while pursuing the process of rationalisation, provision should be made for appropriate measures in view of the contingency that the first phase of the process may result in loss of employment or a more toilsome form of labour." The Second Economic Conference will undoubtedly be called upon once more to discuss rationalisation and its consequences, but in an economic situation much more complicated than that of 1927.

More than 100 authorities on this subject have contributed to this volume which deals fully with the different phases of rationalisation, and the valuable information thus made available may be regarded equally as documentation and as providing a starting point for further work.

The book consists of three main divisions. The first part deals with the rationalisation movement, in the different parts of the world, as well as on the international

scale. A review is made of all the institutions undertaking the study of rationalisation in the widest sense of the word. In this part reference is made to the activity of the International Institute of Agriculture, which " has drawn attention to the scientific organisation of agriculture, has organised congresses and has arranged for the carrying out of research work. "

The second part provides a masterly review of the forms of rationalisation, such as normalisation, standardisation, etc.

In the third and last part there is a detailed account of the methods of rationalisation, their application and results in factories, workshops, agriculture, forestry, and in the home. Each chapter of the different parts is followed by an extensive systematic bibliography constituting the directives for further investigations into each problem.

The general idea permeating this encyclopaedic work is that it is essential to follow a rational method in production and to bring a critical mind to bear upon the routine of organisation, since it is only in this way that it is possible to eliminate losses of material and energy occurring in the process of production and to avoid a waste of human strength.

The *Reichskuratorium für Wirtschaftlichkeit* is accordingly to be congratulated on having conceived the plan of bringing together so large a mass of valuable information on all branches of the rationalisation movement and on having presented it in so clear and logical a manner].

M T.

RICHTER-ALTSCHÄFFER, Hans : *Einführung in die Korrelationsrechnung* (Schriftenreihe des Instituts für landwirtschaftliche Konjunkturforschung, Heft 1), Berlin, 1931. S S 58.

RICHTER-ALTSCHÄFFER, Hans : *Theorie und Technik der Korrelationsanalyse* (Schriftenreihe des Instituts für landwirtschaftliche Konjunkturforschung, Heft V), Berlin, 1932. S S 350.

[The method of correlation is so widely used in economic research and in inexperienced hands it so often lends itself to abuse, that it must be thoroughly mastered by those engaged in the investigation of economic problems, especially those dealing with the business cycle. To acquire this mastery, however, is not so easy, in spite of the great abundance of treatises and text-books in which correlation occupies a prominent place. Indeed, in advanced statistical treatises the subject of correlation is usually treated in so highly technical terms as to make it accessible only to persons with good training in higher mathematics. In elementary text-books, if they deal with correlation at all, one generally finds only the practical application of the method explained. Neither the one nor the other class of statistical manuals introduces the student to the subject by clearly setting out the logical background of correlation, except for pointing to its derivation from probability. Yet, it is precisely a complete understanding of the logical foundations of the method of correlation that the economist needs above anything else to be able to use it to advantage. Anyone in possession of two series of apparently correlated variables can calculate the coefficients of correlation provided he has learned by heart the arithmetic of the proceedings; but to decide whether, in a given case, the application of correlation is legitimate and may be expected to yield useful results, as well as to judge of the real value of a coefficient of correlation, one must, besides a thorough knowledge of facts and conditions in the field of research, also have a clear grasp of the logical basis of the mathematical operations involved in correlating sets of variables.

How slippery is the ground through which the statistician has to find his way, using as he does for his inference the propositions of inverse or empirical probability, has been well demonstrated by Keynes in his *Treatise on Probability*. As Keynes puts it, the logical argument upon which the method of correlation depends, "can only strengthen a pre-existing presumption; it cannot create one." Accordingly, he proceeds, "sensible investigators only employ the correlation coefficient to test or confirm conclusions at which they have arrived on other grounds. But that does not validate the crude way in which the argument is sometimes presented, or prevent it from misleading the unwary, since not all investigators are sensible." Economists who have been interested in the development of market research from the methodological point of view, will probably accept this without much hesitation. All the more they will welcome the appearance of some recent publications which do much to promote a clearer understanding and a more sensible use of the method of correlation. Besides Ezekiel's *Methods of Correlation Analysis*, published in the United States in 1930, to this class of welcome additions to the economist's library belong the two books under review.

The *Institut für landwirtschaftliche Konjunkturforschung* did well, indeed, in starting its series of publications by an elementary introduction to the method of correlation, which, a year later, was followed by another, much larger, volume, containing a fully reasoned statement of the mathematical theory and technique of correlation.

Both the *Einführung in die Korrelationsrechnung* and the *Theorie und Technik der Korrelationsanalyse* are essentially text-books for the student possessing only an elementary mathematical training. In the first of them, mathematics are as far as possible avoided, while the second, while it develops mathematical reasoning in full, presents the subject with great skill and simplicity and supplies the reader, by the way, with the essentials of higher mathematics necessary to follow the argument.

The *Einführung* starts from an exposition of the first elements of mathematical and statistical probability as basis for expectation and prevision. The stochastic foundations of the method of correlation are clearly brought out, after which, through the determination of regression lines and standard errors, the student is led to the Pearsonian coefficient of simple linear correlation. In the concluding pages, non-linear and multiple correlation are briefly outlined, their fuller treatment being left to the next volume.

The leading idea of the author, which he is at pains to impress upon the student throughout, is that the method of correlation, in spite of its apparent mysteriousness and difficulty, is essentially simple if presented without overmuch technical detail.

In the *Theorie und Technik*, we are faced with a complete exposition of the subject of correlation, in so far as it is required for economic research. Here, without in any way sacrificing the subject matter to the need of simplification, the author achieves his purpose of fully unveiling the "mysteries" of correlation to the eyes of a layman. The book begins with the examination of the relations between the method of correlation and the theory of probability, showing how, in economic research, owing to complex causation, stochastic connection has to be substituted for functional dependence such as it exists in the field of natural science. Following Tschuprow in his general argument, the author draws a clear distinction between the concepts of function, on the one hand, and of stochastic connection, on the other, pointing to the method of correlation as the instrument of investigation specially designed for research in the fields to which the latter applies. In using this method, however, one must never forget its limitations, in so far as all it can do is to establish "more or less loose and vague relations of probability." The conclusions reached one "can



never trust blindly ; " they, " first and foremost, always require the support of closely reasoned theoretical argument " These words are a useful warning to the beginner in economic research who is being equipped with a powerful but often dangerous apparatus.

There is no need to go into the exposition of the subject matter of the treatise, which takes the student step by step through the determination of regression equations and coefficients, standard errors and coefficients used to measure the closeness of simple linear correlation between variables. One interesting departure from the generally accepted practice should, however, be noted in this connection. To the Pearsonian coefficient of correlation the author prefers another constant, which he calls *Abhängigkeitskoeffizient* (coefficient of dependence), designated by the symbol *AK*. This stands in close mathematical relation to the Pearsonian coefficient, of which it is the square, but especially in a treatise such as the one under review, it possesses the very important advantage of being arrived at by very clear logical steps easily followed by the student

From linear correlation the student is led to simple non-linear and to multiple correlation, linear and non-linear In a special section, the more complicated case of multiple correlation for variables operating jointly is also explained, and the correlation surfaces in which it is expressed are shown Thus, while the student is given a good training in the theory and technique of the methods he will actually require in his practical work, he is also permitted to have an intelligent glimpse into the more abstract and difficult regions of the higher theory of the subject

In the Conclusion, the book contains a passage which is worth quoting, namely : " Only with the greatest circumspection, with great conscientiousness and with a thorough knowledge of the field of research, as well as with a capacity for theoretic analysis, one is in a position to undertake the investigation of a problem by means of correlation If the reasoning apparatus which guides the work is defective, our methods are useless and even dangerous, but when directed by a mind conscious of its purpose, they are fruitful and can contribute to the extension of our knowledge in an extraordinary degree. Indeed, the success of research by means of the method of correlation depends not so much upon the instrument itself, which is excellent, as upon the use that is made of it " The author has certainly done much to help the successful use of correlation by those who study his treatise and follow his advice].

G. P

KAREL ENGLIŠ, Prof. Finanzwissenschaft Abriss einer Theorie der Wirtschaft der öffentlichen Verbands mit besonderer Berücksichtigung der Tschechoslowakei. Verlag Rudolf M. Rohrer, Brunn-Prag-Leipzig-Wien, 1931, pp. 430.

[This work, which is a translation from a Czech original, consists of five main parts After having given in the first part a concise survey of the public associations of an economic or cultural order, the writer proceeds in the second part to the detailed explanation of the the financial system of the State, that most important of public associations He notes first all the advantages and drawbacks of the administration of the public economy by a collective body, the activity of which does not, as does a private enterprise, receive the stimulus of personal interest, and he emphasises the division of labour in public life between the State and the non-official organisations.

Considerable space is given to the taxation system, the classification of taxes according to the different principles, and to the establishment of receipts and expenditure in the annual budget of the State. The writer brings out clearly the tendency, in public life, to multiply taxation in place of imposing a single tax on the total income, a method which from the administrative standpoint is much the easier, but on the

other hand always meets with psychological resistance owing to the fact that the taxpayer is more aware of the burden. The view of the physiocrats, with which Henry George concurred, that there should be no tax on agriculture other than the land value tax, is condemned as being retrograde and no longer corresponding to capitalist economy, under which the farm brings a return not merely in consequence of the increase of the gross product, but also a return expressed in value and resulting from commercial transactions. Thus it is that the agricultural tax includes also the tax on turnover, as is the case in industry.

The problem of credit, as a source of the State finance, is considered here as an essential component of the whole financial system, and the general lines of the organisation and working of the credit system are indicated.

The third part deals especially with the economy of independent organisations; the fourth with the relations of the public and the national economy, with special reference to the Czechoslovakian economy. Considerations of a general kind are contained in the fifth part, which curiously enough bears the same title as the whole book, *viz.* "Science of Finances."

The scientific acumen of the statesman is clearly evident in the whole statement of the subject of finance. The author who is Professor of the University of Brno was formerly Finance Minister of Czechoslovakia. The outstanding characteristic of the method employed by the writer and the one it is desired to emphasise here is the philosophic spirit. Taking as a basis the "Critique of Pure Reason" with its distinction between substance in itself (*Ding an sich*) and its manifestation (*Erscheinung*), together with the researches of one of the most eminent of the German philosophers of our day (Rickert of Heidelberg), he endeavours to show that economic and financial activity, whether of an individual or of the State, does not admit of complete interpretation apart from the application of the teleological principle. In other words, the importance is attached to the *purpose* with which this or that course is entered on, not to the question *why*, following the method of causal logic, nor the *how*, in accordance with the psychological method. This conception of political economy and this deliberate linking of the economic reason to a more general philosophic principle gives a special character and a peculiar interest to these researches.

Another feature to which attention may be drawn is the markedly social trend of the economic theory of the writer. He maintains that all economy, whether public or private, must be directed by the supreme principle of a rational production. Where however this principle comes in conflict with the interests of society and of man, then it is man who must come first and rationalisation as such must yield place to him: "The increase of productivity in a country," says the author, "is not the final end of the State economy and of the policy of the State. Whenever the interest of productivity conflicts with the ideals of the human being and of a nation, then the victory is to these, since it is not a question of securing a maximum activity at any price, but of ensuring the continuous life of the people and their development on sound lines. A productivity which is obtained at the cost of human values, with injury to the life, health and culture of the workers, is not truly economic from the standpoint of the ideal of the individual and of the nation" (pp. 340-341).

The technical competence of the writer makes this book of special value alike from the scientific standpoint, and also as a textbook. On the social side its broad conception of human economy and of public finances makes it a book be read attentively and pondered over, especially at this juncture, when unemployment is everywhere pressing upon us, and when "Progress and Poverty" are confronting each other to the despair of civilisation].

M. T.

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# MONTHLY BULLETIN OF AGRICULTURAL ECONOMICS AND SOCIOLOGY

## CO-OPERATION

### Co-operation in Estonia.

#### I. — HISTORICAL DEVELOPMENT OF CO-OPERATION.

Agricultural co-operation was started in Estonia in the beginning of the present century, although mutual self-help, especially in respect to fire insurance, had been organised already in the second half of the past century.

The organisation of agricultural co-operation was caused by the reorganisation of agriculture, which with the coming of the new century proved necessary. Up to the beginning of the present century agriculture was carried on on the territory of Estonia with special regard to the growing of cereals and flax. In the sixties of the past century one third of the actual agricultural area of Estonia in some places was sown with flax. The low prices quoted for cereals in Russia affected adversely the prices for this product and no protection could be found, as the actual territory of Estonia then formed a part of Russia. In the seventies of the past century and in the beginning of the present century flax prices in their turn showed a decreasing tendency, in consequence whereof from the last few decades of the past century onwards Estonian agriculture persisted in a state of crisis, which it was endeavoured to overcome by the transition of agriculture from grain and flax cultivation to cattle breeding.

This change required the investment of new capital in agriculture and simultaneously necessitated an intensified soil cultivation as well as a wider utilisation of artificial fertilisers and machinery. On this account favourable preliminary conditions were created for the development of credit societies. At the same time the agricultural societies engaged in promoting agricultural reorganisation suggested that it would be reasonable that the means used in agricultural production, as for instance artificial fertilisers and different agricultural implements, should be jointly purchased. These joint purchases, at first more or less occasional, in the course of time acquired an organised form out of which the agricultural buying companies arose, under the name of "economic societies."

With the development of cattle breeding the formation of co-operative dairies as well as of stud cattle societies proved necessary.

The introduction of machinery into agriculture brought into existence a number of co-operative societies for the use of agricultural machinery.

This extensive development of agricultural co-operation attained its full impetus at the time the world war broke out, which temporarily interrupted this movement, full of power and vitality. In 1920 the interrupted development was taken up again and continued in pursuing its former route. This development was first of all facilitated by the rather extensive law concerning co-operation which had been put into operation in 1917 and by which any restrictions imposed on the formation of societies in the Russian times were abolished. Dairies, co-operative stores and co-operative credit societies were formed and federated in central societies.

The independence just attained was accompanied by a land reform and thus by a considerable development of the small farmholding, which was a further stimulus to the extension of co-operation during the first years of independence. It was suggested that the utilisation of the machines and of the different industrial installations of the large estates would be most effective if carried out by the aid of societies, consisting of the colonists who had established themselves on the land plots of the parcelled estates, as well as of other farmers of the neighbourhood.

Potato societies, which are, in fact, co-operative distilleries, have been formed exclusively of the former distilleries of the estates. The land reform also favoured the formation of a series of peat societies, this being due to the fact that the distribution of the peat bogs was carried out with preference given to peat societies.

These are in brief the economic conditions and stimuli which favoured the organisation of agricultural co-operation and we may now proceed to the consideration of the laws governing co-operation.

## 2. — LAWS GOVERNING CO-OPERATION.

Strictly speaking a law concerning co-operation did not exist in Estonia until 1917. The activity of the credit societies obtained a legal basis but previously to the war. The first societies operated according to statutes approved by the Russian Emperor. Such approval before being attained was the subject of long and difficult negotiations with the State institutions which feared that the societies might attempt revolutionary action.

The Russian revolution of 1917 first introduced into Russia a fair law concerning co-operation, which later on was adopted by the independent Republic of Estonia after the latter had been separated from the territory of the Russian Empire. Different parts of the law have been completed, the principal addition consisting in the establishment of a compulsory audit carried out by persons not connected with the society.

The constitution of a society usually provides for a general meeting which elects the management committee of the society and an audit committee by which the control is carried out. Credit institutions must moreover have a council of control to supervise the work of the administration and to determine the direction of such work. In this way the work of the credit societies is subject



to closer supervision. The requirement of a compulsory council does not apply to the other societies, although such a council exists in the separate economic societies and dairies, as well as in many central societies. Societies containing over 300 members are entitled to form a body of representatives, who act in place of the general meeting or parallel with it.

At the general meeting of the society each member has one vote, which may be transferred and does not pass to his heirs. The law concerning co-operation has lately been supplemented by a provision to the effect that at the general meeting of a marine insurance company a member may have several votes, the number of which however must not exceed one tenth of the total number of votes held by the members of the society. In the marine insurance societies the voting right may be transferred in a manner precisely laid down by the rules. Without the introduction of such an amendment the co-operative organisation of marine insurance had been found to be impossible.

The unlimited liability provided by the law as a rule does not exist in the societies; the rules provide solely a limited liability, and there is no prohibition as to the entire omission of any additional liability on the part of the members.

The Government endeavours, by different legislative means, to ensure that co-operation shall be established on a sound basis. To this end:—

(1) Audit by persons not connected with the society has been made compulsory.

(2) The Government has been given the right to prevent the formation of superfluous societies.

(3) The Government has the right to suspend the operations of societies infringing the rules or the law, or not fulfilling the requirements of a correct management of affairs.

(a) *Organisation of the Compulsory Audit.* — Since 1919 any societies operating in Estonia are subject to a compulsory audit carried out by persons not connected with the society. At first the audit was carried out in every district by the Court. Since 1926 however new rules have been in force in this matter. According to the law every co-operative society must be member of an audit union created by the societies for the purpose of making audits and managed by them. This union must see that in the course of two years every society shall have its accounts audited at least once, in default of which the Minister of Justice and of Interior may deprive the union of its right to make audits.

According to the law the administration of the societies is bound to lay the auditors' report before the next general meeting, on which it depends whether to take into account or not the matters taken up by the auditors.

The amendment of the law concerning co-operation made in 1931 extended the power of the audit unions by giving them the right to convene the general meetings of the societies, if the results of the audit made necessary a prompt decision of the general meeting, and to apply to the Minister of Justice and of the Interior for an examination of the society's operations in case the society should not within a fixed period remove the defects which came to light during the audit.

By virtue of this latter right the audit unions have naturally the possibility of interfering if the societies do not act correctly.

(b) *The Right of Government to Regulate the Formation of Societies.* — Until 1931 the formation of any co-operative organisation was admitted without any restriction. To this end no Government authorisation was required. The rules only had to be registered and the society could start operations. On account of the formation of superfluous societies in some branches of co-operation, which resulted in unhealthy competition between the societies, the Government decided in 1931 to obtain from the State Assembly the right of interference in such case. Since 1931 a Government licence has been required for the formation of co-operative loan societies, as well as of mutual insurance companies which are to operate in a larger area than a commune. Such a Government licence is also required for the formation of new dairies, separating stations, and milk receiving centres. By this means it is hoped to prevent the formation of undertakings not likely to prosper and to avoid useless losses in such important branches of Estonian agriculture as the co-operative handling of live stock products, co-operative credit, and insurance. For the formation of societies of other kinds no Government authorisation is required.

(c) *The Right of Government to Stop the Operations of the Societies.* — In order that no unsound and injurious activity may be carried on under the name of co-operation, the Government, in addition to the right to regulate the formation of societies, obtained the right to suspend the operations of such societies as do not act in conformity with the requirements of the laws and of the rules, or the suspension of the operations of which has been suggested by the auditors who carried out the audit, or, in the case of insurance companies, by a special supervising body. Thus if the affairs of the societies have not been found in an absolutely correct state their operations may be suspended. This right of the Minister of Justice and of the Interior, however, does not apply to credit institutions, the operations of which must be suspended in the same circumstances as other credit institutions operating in the form of limited share companies, which must cease doing business if they have lost one third of their share capital.

### 3. — TOTAL NUMBER OF SOCIETIES.

On the territory of the Estonian Republic there operate about 3000 economic societies. Thus there is roughly one society to every 400 persons, which proves the wide extension of co-operation in Estonia. To a certain extent however these figures are open to criticism and it should be borne in mind that in many cases, especially in agriculture, the same individual is a member of several societies.

Of the total number of societies about 2,800, or more than nine tenths of the total number of the societies are agricultural co-operative societies. Among the townspeople and the working classes, co-operation is not very highly developed.

As to the separate classes of agricultural societies, these are to be divided into the following groups: (1) societies for the handling and sale of products; (2) societies for assisting agricultural production; (3) co-operative credit institutions, (4) economic and distributive societies of consumers, and (5) co-operative insurance companies.

According to the data as on January 1, 1932, the total number of societies was divided as follows :

I. — Agricultural societies for the manipulation and sale of products including :

Dairies . . . . .	443
Potato societies . . . . .	103
Flax-growers' societies . . . . .	7
Miscellaneous societies . . . . .	39
	592

II. — Societies for assisting agricultural production including :

Societies for the utilisation of machinery and different agricultural installations . . . . .	676
Peat societies . . . . .	577
Societies for the supply of electricity . . . . .	6
Stud cattle and cattle breeding societies . . . . .	136
	1,395

III. --- Co-operative credit institutions (granting credits to agriculture) . . . . . 165

IV. — Economic societies and wholesale societies of consumers  
(serving agriculture) . . . . . 200

V. — Co-operative insurance companies . . . . . 421

#### 4 - - CO-OPERATIVE MANIPULATION AND SALE OF AGRICULTURAL PRODUCTS.

(a) *Co-operative Dairies* — Cattle breeding represents the principal branch of agricultural activity in Estonia and in connection with it dairy farming is of particular importance. Co-operative dairying has in the course of a few years attained considerable results and its constantly rising importance is gratifying. Between 1923 and 1930 the number of the butter exporting dairies registered at the State control station for the export of dairy products increased from 130 to 306, while the number of private dairies at the same time declined from 94 to 41. Dairy farming is thus entirely governed by co-operation. In addition to the co-operative dairies producing butter for export, there are 137 societies, the activity of which consists in the joint sale of milk, or in the maintaining of a separating plant and in the sale of cream mainly to the nearest dairies producing butter for export.

According to statistics available in respect to co-operative dairies 67,000 farming households take part in the supply of milk to the dairies or half of all the farms of Estonia. In order to give an idea of the organisation of the Estonian dairy farming it should be pointed out, that as compared with the territory of the Estonian Republic the existing 347 private and co-operative dairies producing butter for export do not form a close network, for there is frequently a distance

of 15 to 20 or more kilometres between them, this circumstance no doubt rendering somewhat difficult the transport of milk by the farmers, especially in the case of unsuitable roads. Such a state of affairs made it necessary to establish separating stations where the milk received from the farmers is separated, and the separated milk is at once returned to the farmers, while the cream is sent to the dairies, where it is worked mainly into butter. Cheese is rarely produced by the co-operative dairies, this being usually done in the private ones. The separating stations included, Estonia possesses milk receiving centres consisting of 925 units, the distance between them, in the case of half of the total number of dairies, being not over 8 kilometres, the milk accepting centres thus in most cases being situated at a distance of not more than 4 to 5 kilometres from the farms.

As a rule the farmers themselves transport the milk, in separate cases only the milk is transported by the dairies on means belonging to them, usually on motor lorries. Such a collection of milk is rather troublesome on account of the farms being widely dispersed. In order that the farmers of the farms situated far from the milk receiving centres should not be placed in a position much worse than that of the farms situated in the proximity, in certain dairies the cost of transport is reimbursed to the farmers according to the quantity of milk, the cost being greater the greater the distance.

In 1930 the quantity of milk handled daily in a dairy amounted on the average to 1.1 millions of kg. against 376,000 kg. in 1924, which shows that the increase of the number of dairies proceeded parallel to the enhancement of milk production, which was partly due to the increased number of cattle, partly to the greater yield of milk per cow. In the development of milk production the co-operative dairies played a decisive rôle.

The skimmed milk is usually returned to the farmers who utilise it for the feeding of pigs.

Estonian butter, which in 1931 was exported in quantities amounting to 14,000 tons, in pre-war times was consumed by the capital of Russia, whereas at the present time it is exported to Western Europe, especially England and Germany, and in less considerable quantities to Belgium, France and Switzerland.

With a view to getting a higher price on the foreign market it was absolutely necessary to pay attention to the good quality of the butter produced, and in this direction again the co-operative societies have been of great importance. The principle of the co-operative dairies consisted in paying for the milk a price calculated in accordance with the percentage of fat and by taking also into consideration the quality of the milk as determined by the aid of the reductase test. Until 1930 14 per cent. of the dairies had voluntarily adopted this principle and paid for the milk accordingly. However, it frequently occurred that the dairies carrying out this reasonable arrangement had trouble with the dairies of the vicinity and therefore on 1 June 1932, the Government intervened by establishing a compulsory price to be paid for the milk according to its quality as determined by the aid of the reductase test. By this means it is hoped to attain a careful treatment of the milk by the farmers, especially as regards milk cooling, which will

improve the quality of the collected milk and consequently of the milk products, and raise the price obtained for them on the foreign market.

The Government has moreover tried in another way to raise the quality of the articles produced by the dairies, *viz.*, by establishing an export control, consisting in the technical supervision of the dairies and in a thorough control of the products in respect to quality, taste and water content, carried out in the export warehouses and laboratories. The controlling institution, called into existence by the State but maintained by the producers, supplies the dairies without charge with the pure culture of lactic acid, this arrangement also being undertaken to attain the uniformity of the article produced and to raise its quality.

The total yield of milk in Estonia in 1930 amounted to 811,000 tons, of which 380,000 tons were brought to the dairies; 47 per cent. of the total yield of milk in Estonia was thus handled by the dairies, 41.5 per cent. being handled by the co-operative dairies and 6.5 per cent. by the private dairies.

More than nine tenths of the Estonian butter production are destined for the foreign market, 61 per cent. of the entire export being effected by the co-operative societies.

(b) *Potato Societies or Co-operative Distilleries.* — The sandy ground of Northern Estonia favoured the cultivation of potatoes. For the utilisation of these potatoes in pre-war times on the territory of Estonia 278 distilleries were established by the great land owners. The alcohol produced in the distilleries was sold to Russia. After the large estates had been liquidated in consequence of the land reform carried out the said distilleries were taken over by the co-operative organisations of potato cultivators, and in this way there came into existence co-operative distilleries under the name of potato societies, for they chiefly use potatoes for the production of alcohol and potato starch.

The chief consumer of the production of these co-operative distilleries is almost solely the State alcohol monopoly, for since 1924 the alcohol export has been rather insignificant owing to the prohibitive system in force until recent times in the countries adjoining Estonia which might have been expected to be buyers. As to the distant markets, the Estonian alcohol being produced from rather high priced potatoes had to compete with the alcohol produced in several states of Central Europe from the cheap waste of sugar production and of other waste.

During the second quarter of 1932, after the prohibitive system in Finland had been abolished, the alcohol export has been taken up again, however within restricted limits.

On account of the State being almost the only consumer of alcohol, the work of the co-operative distilleries is greatly restricted and is determined by the quantity of alcohol required annually by the State.

Owing to the lack of a wider outlet for the existing 278 distilleries only 129 are operating, a part of them belonging to private firms. In addition to the production of alcohol some co-operative potato societies also produce potato starch, which is partly placed on the home market, partly is compelled to look for markets abroad.

Of the total yield of potatoes from 6 to 7 per cent. are used for the production of alcohol and starch, the potato societies thus being in Estonia of less

importance in the disposal of potatoes than are the dairies in the disposal of the milk output. Nevertheless the importance of the potato societies in the utilisation of waste potatoes and of potatoes of inferior quality deserves mention, particularly as the residues of alcohol production represent a valuable fodder for cattle in the winter period.

About half (57 distilleries out of 129) of the distilleries operating in Estonia are affiliated to a central organisation of potato societies, which in addition to the distillation and sale of alcohol is engaged in the development of potato cultivation.

This co-operative central organisation has attempted also to engage in the potato trade, especially the export of potatoes; these attempts, however, did not succeed owing to the lack of experience and to the absence of the necessary equipment on one hand, and to the risk connected with the undertaking on the other.

(c) *Co-operative Slaughter Houses and the Organisation of the Sale of Live Stock.*— The chief article produced by the Estonian dairies is butter. The production of cheese is limited. Therefore the separated milk is returned to the farmers, and consequently the question arises as to which would be the most reasonable way to utilise it. The breeding of pigs presents one of the possibilities for the utilisation of the separated milk. However, as the home market had a limited capacity for absorbing the products obtained from a developed breeding of pigs, it was necessary to think of export possibilities and of the production of bacon for the English market. The slaughtering capacity of the four slaughterhouses of Estonia amounts to 260,000 pigs annually, but they have hitherto been used up to less than a third of their capacity, for in 1931 only about 70,000 pigs were slaughtered in the slaughterhouses.

The intensified breeding of dairy cattle favours the development of the breeding of pigs, which on the other hand is encouraged by the export premium paid by the State. As a result, the number of pigs in Estonia in 1931 had risen by 11.3 per cent. as compared with the preceding year.

The bacon export is entirely organised by the co-operative societies, for all the slaughterhouses belong to them.

The collection of the pigs on the spot is carried out through the co-operative dairies, the distributive societies of consumers, and also by the agents of the slaughterhouses. Each pig purchased is marked on the ear with a number and payment is made later on to the farmer for each pig separately, the amount of the payment being determined by the weight of the slaughtered pig and by its quality. For pigs of superior quality, from which high priced bacon is produced, in addition to a higher price a special premium is accorded to encourage the improvement of quality.

Owing to the fact that in the payment for pigs special account is taken of the quality and that a premium is given for pigs of superior quality, the quality of Estonian bacon, the production of which was started in 1922, has attained a rather high level.

The work done in connection with the raising of the quality of bacon has been developed to such an extent, that latterly 85 per cent. of the pigs slaughtered

for export have given bacon of superior quality. The services rendered by the export slaughterhouses and by the organisations for pig breeding consist in the prompt reorganisation of the Estonian pig breeding, as a result of which long and lean bacon pigs are being bred in place of fat and heavy pigs. As a service rendered by the export slaughterhouses there should also be recognised, that by opening butchers' shops in the towns the supply of meat to the home consumers in many centres has been taken over by the producers themselves.

The sale of pig-meat to the foreign markets has thus been effected to a satisfactory extent. One of the slaughterhouses has even succeeded in exporting live stock and meat, especially mutton, into the neighbouring countries. The co-operative organisation of the sale of live stock on the home market hardly exists at all.

Owing to the considerable decline of the prices for meat products in 1931, which forced the farmers to look for ways of increasing their incomes, the organisation of an intensive sale of live stock has been undertaken. By the law the basis has been laid for the creation of permanent live stock markets in the towns, where live stock shall be sold by live weight and the prices of live stock and of slaughtered cattle shall be quoted. By organising a market of this kind for the present moment only in Tallinn, the capital of Estonia, it is hoped to establish the preliminary conditions for the organisation of the co-operative export as well as of the co-operative sale of live stock on the spot.

(d) *Co-operative Organisation of the Sale of Eggs.* - - Simultaneously with the development of the breeding of dairy cattle and pigs, progress has been attained in the breeding of small stock and particularly in poultry-keeping. From 1922 to 1930 the production of eggs increased by 233 per cent. The rearing of table poultry is of a minor importance.

One fourth of the total egg production is intended for export (according to the data for 1930 it was 27 per cent.). In this line the co-operative societies have found a favourable field of activity. In 1931, 41 per cent. of the total export of eggs was effected by the co-operative societies. These organisations collect the eggs by aid of the grading centres, where the eggs are received, each separately marked with the stamp of its origin, graded and packed in standard cases. The eggs are brought to the grading centres by buyers, by the dealers of the neighbourhood, by the distributive societies of consumers and by the co-operative dairies, or by the persons who maintain the grading centre on their own means of transport. On account of the small quantity of eggs, no independent egg collecting societies could have been established. The aim actually pursued consists in the concentration of egg collection in the existing co-operative undertakings, particularly in the co-operative dairies, to a wider extent than has been done before, in order to remove in this way the agents from the organisation of egg collection. The supply of eggs to the domestic market effected by the co-operative egg shops is but a restricted one, this supply being carried out by the small dealers. The price paid for the egg is determined in accordance with its weight. Eggs are divided according to weight into two classes, eggs less than 50 grammes and eggs over 50 grammes in weight. The freshness of the egg is, of course, also taken into consideration.

The egg export is carried out under the control of the State. The canning of eggs for home consumption is effected to a limited extent. In autumn the co-operative societies are moreover engaged in the export of dead geese, ducks, and turkeys to the neighbouring countries.

(c) *Co-operative Societies for the Sale of Vegetables and Fruit.* — For many years past attempts have been made to organise the co-operative sale of vegetables and fruit on the home market and abroad. As to the sale to foreign markets there has been some success in the export of fruit to Finland. These are however attempts which have not yet reached considerable results. At the present time standardisation is being undertaken.

(f) *Societies for the Handling and Sale of Flax.* — On the Estonian territory flax cultivation represented in the past century an important branch of agricultural activity. Sometimes one third of the total agricultural area was sown with flax. In the course of time, however, this importance greatly diminished and in pre-war days the flax area was constantly reduced.

The high level of flax prices after the world war gave a new impetus to flax cultivation. Until 1925 the area sown with flax grew rapidly. In pre-war times the working of flax was carried out by hand and the sale was effected through private dealers. Therefore it was suggested that the profitableness of flax cultivation might be enhanced if the expensive hand work were replaced by the working by aid of machines. Mainly on a co-operative basis factories were founded for the working of the raw flax and a central society for the sale of flax. Rather large amounts of capital were invested. But flax prices dropped and flax cultivation received a setback, on account of which the factories ceased to be able to work profitably and stopped working. The continued crisis in the flax market did not allow the factories to start working again. The central society for the sale of flax suffered in the same way and was likewise compelled to cease working.

## 5. -- SOCIETIES WHICH ASSIST IN AGRICULTURAL PRODUCTION.

In addition to the classes of societies enumerated which are engaged in the preparation of the articles for sale and in the organisation of the sale, in Estonia a great number of societies exist which participate in the processes connected with production, either by procuring in common means used for production (societies for the use of agricultural machinery, grain drying societies), or by creating possibilities for producing (peat societies). The system of small landed properties renders necessary the existence of such societies.

Societies for the use of agricultural machinery, particularly for the joint use of threshing and grain grading machines, were first formed at the beginning of the present century. After the carrying out of the land reform, when the machinery of the large estates had to be utilised by the farms established on the area of the large estates, the number of these societies increased. The central organisation of the societies for the use of agricultural machinery gives technical advice to the societies and directions as to the keeping of accounts.



The wet weather in Estonia in autumn necessitates that the grain should be dried before being placed on the market or stored. As it would be troublesome for each separate farmer to procure a grain-drying machine, which is only used during a short period in the year, co-operative grain-drying societies have been formed. The newly formed farming households frequently do not separately procure grain-drying machines, this being done jointly by several households.

Of the total area of Estonia, 14.7 per cent. is covered with moors. The moors supply a valuable fuel, *viz.* peat, which made possible the establishment of an electric station of high tension, the main wires of which cross the country in every direction, a fact providing favourable conditions for the electrification of agriculture, and offering possibilities for the working of electricity supply societies. Nevertheless these societies are scarcely developed, being only six in number; this may be explained by the fact that in Estonia only a few villages exist in the separate parts of the country, while usually the farms are dispersed, on account of which the procuring of electric installations and the utilisation of them would be too expensive.

These areas covered with peat have caused the formation of another class of societies, that of peat societies, engaged in procuring their members peat bogs, mainly by the way of leasehold, where peat cutting may be undertaken either by any member separately, or by the whole society. The peat is partly used as fuel, in most cases however, as a litter for the cattle, for it is a splendid absorber of the fluid excretions of the cattle, and thus forms a nitrogenous fertiliser.

The majority of the peat societies is affiliated to a central organisation, which gives them technical advice and directions as to the keeping of accounts.

For the purpose of cattle improvement there were established stud cattle societies providing their members with stud cattle of high quality. The stud cattle are often imported from abroad, which would be impossible for a separate farmholding. In the matter of cattle improvement hard and successful work has been accomplished by the co-operative societies.

## 6. — CO-OPERATIVE CREDIT INSTITUTIONS.

The co-operative credit institutions count among the oldest co-operative institutions of Estonia and were first formed in 1902. In the beginning of the development of this kind of institution they were divided into two different types: institutions with a wide field of activity, known under the name of credit societies, embracing chiefly the middle classes of the towns and thus being of the nature of the Schulze-Delitzsch people's banks, and institutions with a restricted activity, the so-called savings and loan societies, which mainly served agriculture and thus were of the type of the savings and loan societies of Raiffeisen. This difference of types was approved by the law.

In 1920 the juridical difference between the two types was abolished and there remained a single type of co-operative banks. As a matter of fact, however,

two types of co-operative credit institutions arose : institutions which operated in any branch of banking business and thus represented co-operative banks in the full sense of the word, while the smaller co-operative loan institutions in the country confined themselves exclusively to savings and loan business and were opened for such business once or twice a week. By the law concerning credit issued in April 1932 these two types of loan institutions have been legally approved and again established under the name of co-operative banks and savings and loan societies. This difference provided by the new law not having been as yet practically realised, it is not possible to state how many of the existing credit institutions may be counted among co-operative banks, and what is the number of those to be regarded as savings and loan societies.

According to the law the co-operative banks may carry out any operation executed by commercial banks ; they are entitled to grant loans to non-members on previous decision taken by the general meeting. The activity of the savings and loan societies is limited to the acceptance of deposits and to the grant of money loans to the members, exclusively against promissory notes, the granting of loans founded on bills being prohibited.

The savings and loan societies must contain at least 25 members and the co-operative and central banks at least 50 members. A smaller membership prevents the credit institution from starting business and the society is compelled to cease working when the number of the members falls below the prescribed number.

To co-operative institutions, both to co-operative banks and to savings and loan societies, a special right has been given to grant loans on the security of implements and tools used in agriculture and hand industry, the articles accepted as security remaining in the hands of the borrower, who may continue to utilise them.

All the co-operative credit institutions described obtain their working capital in the form of deposits. In the co-operative credit institutions in the towns these deposits are for the most part placed on current account, while in the country they are placed on deposit account. Latterly there figure in the balance sheets of the credit institutions also current accounts and guaranteed loans. Short term bills, if such are kept by the bank, may be rediscounted by the co-operative banks in the bank of issue. Promissory notes may be rediscounted in the State Mortgage Bank. Two co-operative central banks act as financial centres for the co-operative credit institutions and utilise their surplus capital. One of these central banks accepts as members only the co-operative institutions, the other accepts in addition to the co-operative institutions also private persons.

In connection with the execution of the land reform and with some measures of agrarian policy taken by the State the latter has directed the loans into agriculture through the co-operative banks. These sums, however, play a rather insignificant part in the balance sheets of the credit institutions.

As a rule the co-operative credit institutions grant to agriculture short term working credits. In accordance with the law the term of the loans granted must not exceed a year.

No statistics are available as to co-operative credit institutions serving agricultural interests, so that no data can be presented concerning their activity. The importance of the co-operative credit institutions in the economic life of Estonia is nevertheless clearly indicated by the following figures collected up to November 1, 1931, relating to all joint stock banks and to 182 of the most important co-operative credit institutions out of 230 similar institutions operating in Estonia.

	Private banks	Co-operative credit institutions
	(millions of crowns)	
Capital . . . . .	7.2	5.0
Deposits . . . . .	37.7	34.1
Rediscount and debt accounts in other banks . . .	28.6	7.9
Loans . . . . .	67.3	43.1
Securities . . . . .	6.0	1.1

As may be seen from the above figures the co-operative credit institutions, as regards banking capital, are not on a level with the joint stock banks; in the handling of deposits, however, their position nearly corresponds to that of the joint stock banks. The co-operative banks generally operate within the limits of their own capacity and do not use credits of the Bank of Issue and of other financial institutions to such an extent as the joint stock banks usually do. It should be pointed out, that the activity of the co-operative institutions is steadily increasing and that their position constantly strengthens as compared with that of the joint stock banks.

#### 7. — CO-OPERATIVE SOCIETIES FOR PROCURING THE REQUISITES OF PRODUCTION.

In the beginning of the development of Estonian co-operation the requisites of production were supplied by the commercial departments of the agricultural societies. These commercial departments changed into independent co-operative enterprises, which in addition to requisites of production sold victuals and later on iron ware, textiles, and footwear. In such a way there arose in Estonia a series of co-operative shops, of which actually 200 do business in the country and provide the farmers with agricultural requisites as well as with various other articles. These are rural co-operative distributive societies organised, as far as may be, in conformity with the Rochdale principles. The annual turnover of these shops varies greatly, ranging from 15,000 to 2,500,000 crowns. The number of individuals employed varies from one to several hundreds.

These societies, called "consumers' economic societies," have a central society to which they are all affiliated and which supplies them with goods;

85 per cent. of all imported artificial fertilisers pass through the hands of this central society.

The attempt to organise the work of these consumers' societies in the country in accordance with Rochdale principles did not succeed owing to the working conditions of the consumers in the country. One of the most important of the Rochdale principles, for instance, the sale exclusively against cash, could not be introduced, the farmer not being in a position to pay cash for the requisites, such as fertilisers, machines, etc., purchased by him. On account of the fact that buying facilities have been accorded to the farmers by private trade which admitted purchase on credit, the economic and distributive societies of consumers were bound to do the same.

These consumers' societies in the country are moreover engaged in the collection of eggs and of slaughter stock and in arranging the sale of them.

During the crisis through which agriculture passed in 1930 and 1931 some of these societies, especially the smaller ones, were liquidated, as they were unable to adapt themselves to the changed conditions of agriculture.

#### 8. — CO-OPERATIVE INSURANCE COMPANIES.

In Estonia there are 421 insurance companies, five of which have an area of operations embracing the whole country while the other companies operate within the limits of a single commune. The latter are of the nature of agricultural mutual aid institutions in the strict sense.

These companies were established by law in the second half of the last century, the law making it compulsory for the peasants to insure their property, in order to prevent the farmers from suffering heavy losses in the case of fire. In addition to a trifling money compensation the relief granted consisted in supplying wood to the farmer who had suffered the losses and providing workmen to rebuild the house damaged by fire. The compensation was thus given mainly in kind.

In the different parts of the country inhabited by people of small means there still exist mutual insurance companies, which in the case of damage by fire grant relief in the form of wood including transport, and of labour, while the money compensation is of insignificant amount or no money compensation is given at all. This type of insurance company has outlived its utility. It is difficult to apportion the relief fairly and, moreover, the compensation in kind is insufficient to meet building requirements, which are greater than they formerly were.

Therefore a reorganisation of these companies has been undertaken and has already been going on for some time; the aim of this reorganisation is the adoption of a system of compensation entirely in money in the event of losses occurring.

In some cases the loss suffered is estimated and the compensation is afterwards levied from the other members of the company. This system, however, does not result in prompt payment of the compensation, for the recovery of the amount insured takes a considerable time, and therefore there is a growing tend-

ency towards the introduction in local insurance business of the system of paying losses out of the premium received in advance while in the event of considerable losses compensation should be paid by means of re-insuring with another company. In this way the type of the companies operating in single communes, basing their business on money premiums and re-insuring from 30 to 90 per cent. of their total risks, is steadily developing. Half of all the existing insurance companies have recourse to re-insurance. As these companies do not employ agents, their expenses are considerably lower than those of the companies working throughout the whole country with the aid of agents.

There are five insurance companies which have extended their operations to the whole country or to several districts. They accept risks from the inhabitants of the country and of the towns. The work of the insurance companies of the communes consists almost exclusively in insuring against fire, and, in some cases, in insuring cattle, while the insurance companies operating over the whole country carry on life insurance, transport insurance, insurance against theft, etc.

The insurance companies doing business throughout the whole country as well as those working within the limits of a commune are affiliated to a central insurance company which acts as an institution for re-insurance. This central insurance company mutually shares the risk undertaken by the four most important insurance companies doing business throughout the whole country. The different risks insured by co-operative insurance companies show that of all the insurance companies the co-operative ones are the most important, for one fifth of the life insurance, half of the fire insurance, one sixth of the transport and accident insurance, and a large part of the cattle insurance as well as of the hail insurance, is carried out by the co-operative insurance companies.

## 9. — SUMMARY.

The present exposé contains a brief account of co-operation in Estonia, and shows the economic features which caused the organisation of co-operation in that country, as well as the foundations on which co-operation is based. Co-operation forms an organic part of the agriculture of Estonia. The development of agriculture in Estonia has stimulated the organisation of co-operation; the latter however on its part has contributed towards the further development of agriculture, and from time to time has even been the factor which had to bear the burden in connection with the difficulties of agricultural reorganisation.

The intensification of Estonian agriculture in the beginning of the present century has been effected by the aid of the credit and supply societies, while the dairy societies facilitated the transition of Estonian agriculture from the cultivation of cereals to cattle breeding. Yet in the past decade the dairies had to accommodate the butter export, which previously was adapted to the requirements of the Russian market, to those of the market of Western

Europe. Co-operation has had a decisive influence upon the development of new branches of agriculture, as for instance, in recent years, the breeding of bacon pigs. To this end it did not suffice to increase the breeding of pigs, but this had to be placed on a new basis and instead of the fat pigs the breeding of bacon pigs had to be developed in conformity with the requirements of the English market.

The directions given by the co-operative slaughterhouses and the stimulus emanating from them penetrated to the most remote farms and in a short space of time brought about a thorough work of re-organisation. It should be mentioned that the State appeared as a supporter of co-operation only during the past decade, while previously co-operation was entirely supported by its members.

In agricultural co-operation the importance of the societies which look for markets for agricultural products, whether in an unworked or worked state, is steadily rising. Hitherto the development of the societies engaged in the supply of distant markets has been most remarkable. The near future will decide whether the sale of agricultural products on the home market can also be organised on co-operative lines.

## MARKETING OF AGRICULTURAL PRODUCE

### Proposals for Remedying the Situation of the Wool Growing Industry in Australia and the Union of South Africa.

For some time past the position of the wool industry has been a subject of vital concern in Australia, the premier wool producing and exporting country of the world, and in South Africa which stands third of the five leading wool exporting countries. In the remaining three of the five, viz., Argentina, Uruguay and New Zealand, although the pastoral situation undoubtedly gives rise to anxiety, there is a closer inter-organisation of wool and meat production, so that advantage can be taken of market conditions for either product according to circumstances. In Australia the sheep runs, especially the larger runs that still prevail, are frequently organised for wool production only, while in South Africa the export of mutton and lamb has hardly passed beyond the experimental stage.

In consequence in these two countries, possessing, Australia, 107 million and South Africa at a low estimate, 44 million sheep, the main problem is that of the wool grower and his failing fortunes.

Briefly stated, the wool industry reached in 1932 its fourth successive year of selling at a loss. The drop in the high values that marked the post-war period began in 1924-25, and since that time the wool season of 1927-28 has been the only one in which prices at the close of a selling year have been higher than at the opening, and since then they have fallen below cost of production. The discussion of possible remedies follows similar lines in Australia and the Union; in both legislative measures for regulation of markets have been or are

being proposed, while in both the growers are opposed to control and instead demand assistance by means of reduction of governmental charges, or, as it is expressed, of "costs outside the fences."

Before examining the various proposals, it may be useful to indicate the statistical position as regards production of wool, as well as the figures for price levels on the wool markets in recent years.

The obtaining of accurate wool production statistics has been and still remains a matter of some considerable difficulty, and all figures must be regarded as approximate only. The following production figures are taken from a statement on the World Situation in Sheep and Wool prepared by the Division of Statistical and Historical Research of the Bureau of Agricultural Economics of the United States Department of Agriculture (1). It is explained that the figures shown for any year include wool shorn in the spring of the Northern Hemisphere and in the last few months of the same calendar year in the Southern Hemisphere. In fact, the Australian and the South African clips are always returned as from 1 July of a given year to 30 June of the following year, the preliminary estimates having been announced some six months earlier.

According to the figures published in this statement, the total world production of wool for the year 1927, the year preceding the onset of the general economic crisis (excluding Russia and China and including the 1927-28 returns for the Southern Hemisphere), was 3,068 million pounds, while the figure reached for 1930 (1930-31 in the Southern Hemisphere) was 3,260 million pounds, showing an increase of production of some 192 million pounds, or about 6 per cent. Considering only the countries regularly reporting over the period, the figures are respectively 2,677.4 million pounds for 1927 and 2,847.5 million for 1930, showing an increase of 170 million pounds or nearly the same percentage. For most of these countries, however, returns are also shown for 1931, including the 1931-32 preliminary estimates for Australia and South Africa. The total 1931 production is accordingly stated as 2,913,353,000 pounds, but as, subsequently to publication of the statement, it proved that the Australian clip had been over-estimated by five million pounds and the South African by 29 millions, this figure must be subject to correction to this extent. On the other hand this production figure does not include the returns from a number of countries showing returns in previous years ranging from half a million up to 48 million lbs. (Italy), so that the total production for 1931 could not in the absence of these returns be stated with precision. Taking these corrections into account, however, a probable approximation to the total would be 2,930,000,000 lbs, or an increase of 253 million lbs. as compared with the total for 1927.

For the five leading wool exporting countries, all situated in the Southern Hemisphere, it will be useful to show the comparative approximate figures of production for the seasons 1927-28, 1930-31, and 1931-32 adding such preliminary estimates as are available for 1932-33. For purposes of comparison, the figures already given of world production are added below.

(1) *Foreign Crops and Markets*, Vol. 24 Nos. 15 and 16. Washington D. C. 18 and 25 April 1932.

*Production of Wool.*

	1927-28 lbs.	1930-31 lbs.		1931-32 lbs.	1932-33 (est.) lbs.
Australia . . . . .	828,630,000	861,200,000	(a)	945,000,000	961,000,000
Argentina . . . . .	336,000,000	351,000,000		333,000,000	
British S. Africa . . . .	273,000,000	305,000,000	(b)	306,000,000	301,000,000
New Zealand . . . . .	228,900,000	260,000,000		257,000,000	
Uruguay . . . . .	131,000,000	154,000,000		130,000,000	
Totals for these five countries . . . . .	1,797,500,000	1,937,200,000		1,971,000,000	
Totals for all countries regularly reporting . . .	2,677,130,000	2,847,550,000	(c)	2,930,000,000	

N. B. The figures for South Africa are estimates based on exports, and include wool produced in territories adjoining the Union

(a) Preliminary estimate 950 million lbs.

(b) Preliminary estimate 335 million lbs.

(c) Subject to correction.

It is clear from the above figures that there has been a very considerable increase in the world production of wool in the period under review. A statement was in fact lately made in an Australian periodical of high repute (1) that " world production of wool is now (1932) over two million bales larger than five years ago." Taking the bale at 310 lbs., this would be equivalent to an increase of 620 million lbs. since 1927, or a present world total of over 3,290,000,000 lbs.; this is however a general world estimate, not confined to the returns of countries regularly reporting.

The major part of this world increase, whatever may be its exact figure, would seem to be attributable to the larger Australian clip, which for 1931-32 shows an advance of 116,370,000 lbs. over that of 1927-28, or approximately half the world increase. Over this period the South African increase was 33 million and the New Zealand 29 million lbs.; on the other hand the South American exporting countries show small decreases. Outside the five leading exporting countries the only two areas producing over 100 million lbs. annually, as shown in the statement of the Bureau of Agricultural Economics, are the United States, and the United Kingdom taken together with the Irish Free State for this purpose. The United States production increased over the period from 289,910,000 lbs. in 1927 to 369,320,000 lbs. in 1931, or an increase of nearly 80 million lbs.; the British and Irish production rose during the same years from 118,540,000 lbs. to 122,000,000 lbs., or by about 3.5 million, the two preceding years having been marked by a slight decline in production.

It will be sufficiently clear from these figures that this period of general crisis has been marked by a considerably increased world wool production to which the largest contributions have been made by Australia and the United

(1) *The Pastoral Review*, Vol. XLIII, No. 2, Melbourne, February 1933, Leading article, p. 131



States. Even under normal conditions, it seems improbable that consumption would have expanded sufficiently to keep prices up to the level prevailing before 1928. With a reduced consumer demand due in part to lowered purchasing power and the fall in general commodity prices the decline in wool prices would appear to have been inevitable. The following statement of prices of scoured wool ruling on the London market will serve to show the extent of this decline over the period under review. The average prices of three different classes of wool are shown for the successive periods of six months from July 1927 to June 1932.

*Average Prices of Scoured Wool at London Wool Sales July 1927 to June 1932*  
(in pence per lb.) (1)

Half yearly periods	Merino pieces	Crossbreds Fine fleeces	Crossbreds Medium fleeces
	d.	d.	d.
1927 July-December . . . . .	49	43	25 <sup>2</sup> / <sub>3</sub>
1928 January-May . . . . .	49	44 <sup>2</sup> / <sub>3</sub>	30 <sup>1</sup> / <sub>2</sub>
1928 July-December . . . . .	46 <sup>1</sup> / <sub>2</sub>	43 <sup>1</sup> / <sub>2</sub>	28 <sup>1</sup> / <sub>2</sub>
1929 January-May . . . . .	42 <sup>1</sup> / <sub>2</sub>	39	25
1929 July-December . . . . .	33	29	21
1930 January-May . . . . .	24	22 <sup>1</sup> / <sub>3</sub>	16
1930 July-December . . . . .	22 <sup>1</sup> / <sub>3</sub>	18	13
1931 January-May . . . . .	19	16 <sup>1</sup> / <sub>3</sub>	10 <sup>2</sup> / <sub>3</sub>
1931 July-December . . . . .	18 <sup>1</sup> / <sub>2</sub>	18	9 <sup>2</sup> / <sub>3</sub>
1932 January-June (8 sales) . . . . .	16 <sup>1</sup> / <sub>2</sub>	18	8 <sup>1</sup> / <sub>2</sub>

The London wool sales are held in series of three weeks at a time, there being usually six series in any one year. In 1932 seven series were held. No sales are held in August and except in 1932 none were held in June. The above averages accordingly for the most part represent the prices ruling over three series of sales. The low average for Merino pieces, which in June 1932 fell even as low as 14 <sup>1</sup>/<sub>2</sub> d., seems to be an instance of inadequacy of the information conveyed by quoting the "average" price, which is of course merely a figure obtained by dividing the total proceeds of sales of a particular type of wool by the weight of all the different qualities and grades of that type, the lower qualities naturally accounting for most of the weight. On the other hand the practice of quoting "top" prices applying only to relatively quite small lots of superfine wool is open to the objection that it gives an altogether exaggerated idea of market values.

With the opening of the 1932-33 season in September, prices of Merino wools became somewhat firmer, and this improvement has been on the whole well maintained, and extended to other good qualities of wool. It may be noted that the only countries producing Merino wools in any large quantities

(1) Statement reproduced from the International Yearbook of Agricultural Statistics 1931-1932. Rome 1932. Page 620.

are Australia, South Africa, and the United States. In this last the production of Merino wool is not enough to meet the home consumption. Accordingly Australia and the Union of South Africa are the only exporters of Merino wool. The finer spinning qualities, or "counts", of Merino wool are produced with high yields in Australia only, since South Africa has admittedly neither the climate nor the pasture to produce the better qualities except at low yields from the grease. Moreover the South African clips are often too small to allow of classing being done strictly on spinning quality. The top prices obtained for Australian wool are, accordingly, not realisable for Union wools, but prices on a clean scoured basis for similar grades or types of wool are practically the same in both countries (1), the London sale prices being, of course, higher than prices on the markets in the country of origin. It may be added that there has been during the last few years a tendency to eliminate the very inferior wools from the markets.

The position in regard to wool prices is well shown also by a comparison, based on the figures issued by the Australian National Council of Wool Selling Brokers, between the average prices per lb. realised in the grease during the first half of each Australian wool sales season from 1928 to 1932. These averages are as follows :

	Average price per lb., taking all grades
1928 July to December . . . . .	17 5 <i>d.</i>
1929 " " . . . . .	15 5 <i>d.</i>
1930 " " . . . . .	8. 3 <i>d.</i>
1931 " " . . . . .	8. 7 5 <i>d.</i>
1932 " " . . . . .	8. 5 0 <i>d.</i>

It will be noted that as between the three latter periods the differences are very small, and as these figures represent half-yearly averages of monthly variations of comparatively small range, the inference is not unreasonable that a basis of value has been reached which can be accepted as a standard (2). The cost of production of wool is well above any such figure, and is reckoned at from 1*s.* to 14*d.* per lb., including interest charges on land. If such a basis of value has indeed been reached, it will become necessary to consider whether any reduction of costs is practicable, or whether the situation can be improved by the gradual elimination from the market of wools of very inferior grades or by other methods of market control. Even if the basis should prove eventually to be higher, as may perhaps be indicated by recent trends of market prices, cost reduction and elimination of quite inferior grades of wool from the market could hardly be otherwise than advantageous to the industry.

(1) Previous to the abandonment of the gold standard by the Union Government in January 1933, the prices on the South African local markets naturally ruled lower than the Australian.

(2) See *The Pastoral Review*, Vol. XLIII, No. 1. Melbourne, January 1933, p. 59.

A brief review may now be given of the measures proposed directly or indirectly by the Union and the Commonwealth Governments respectively, or demanded by the growers in either country, for the remedying of the present disastrous situation.

It is a fact of some significance that, although the wool export, alike in Australia and in South Africa, is of premier importance to the national income — the wool export value in each case being even now at least one third of the total export values exclusive of gold — there has been up to the present no State regulation of the industry of any kind in Australia, and in the Union of South Africa it was only in 1930 that a semi-official Advisory Wool Council came into existence as a first step towards control or regulation. While in both countries regulation of a number of leading commodities has been established, the whole conduct of the wool industry has preserved, especially in Australia, its traditional and independent character (1).

In 1929 the wool export from Union ports (which includes wool from adjoining territories) reached the largest figure so far on record of 286,878,000 lbs., but owing to the fall in prices the value realised was less by £2,330,000 (£14,521,000 as compared with £16,851,000) than in the previous year. Such a fall in growers' return naturally gave rise to anxiety; moreover it had for some time been recognised that South African wool, although of high quality, tended to suffer in competition with Australian owing to a certain want of uniformity in classing, and the introduction of better classing methods was being urged. A representative Conference of wool growers meeting at Bloemfontein in September 1929 decided to request the Government to institute an export levy on wool for the benefit of the industry. Accordingly, a levy of 1s. per bale, involving a system of inspection at the ports, was instituted as from 1 January 1930, the proceeds to be devoted to research work, organisation of growers, propaganda and other activities for advancement of the industry. The Conference had also recommended, as the best means of ensuring satisfactory administration of the levy fund, the appointment of a Wool Council, advising to the Minister of Agriculture. This body was formed early in the year with the Secretary of Agriculture as Chairman, the members being the president of the National Wool Growers' Association, representatives of the Agricultural Unions of the four provinces and two others representing the unorganised growers of the Union, an official of the Department of Agriculture acting as secretary. The duties of the Council were defined as those of advising on the application of the levy fund and generally on the problems of the industry.

The first meeting of the Wool Council was held in April 1930 and a committee was appointed to investigate and advise in respect of conditions of marketing

(1) Details of the methods of wool marketing in Australia and South Africa will be found in an article by A. FROBISHER entitled *The World's Wool Markets* appearing in the *International Review of Agriculture*, Part. II. Nos. 10 and 11, 1929.

in the Union. The Committee pronounced strongly in favour of the system of auction sales as already in use at the four ports rather than sales by private treaty, recommending that all wool be offered for sale by public auction at least once, and that the Wool Council should issue " an authoritative recommendation to wool producers to support sales by public auction, by instructing their broker to sell their wool by that system. " Other recommendations made by the Committee dealt with the keeping of records of wool offered for sale and of sale transactions, whether by public auction or private treaty, with the desirability of extension of the selling season and with registration of brokers.

It is in fact usually considered in countries where a system of public auction sales exists that sales of wool by private treaty without offering for auction, or " country sales. " tend to injure the demand. The practice also militates against the adoption of improved methods of classing and packing, which are essential for wool offered for sale by public auction. Moreover, the grower who sells privately without first offering for auction may well find that he might have realised a considerably higher price at auction. On the other hand, if offered, properly graded, and then withdrawn on account of low bidding, a better price may subsequently be obtained by private negotiation. Such withdrawal, under reserve, was recognised by the Committee as entirely admissible.

The continued fall in wool prices during the first half of the 1930-31 season led to a proposal, initiated by the Durban brokers, to suspend sales and regulate offerings. At a conference held at Port Elizabeth early in December a short suspension was agreed on to be followed by rationing of sales beginning from 5 January 1931 at the four ports with limits as follows : Port Elizabeth, East London and Durban, 7,000 bales per week ; Cape Town, 1,500 bales per week. An endeavour was also made to impose a scale of minimum reserves, under which wool should not be sold. The rise of prices in February and March 1931 made the rationing of sales unsatisfactory to those concerned, and the scheme was withdrawn, although against the opinion of the Wool Council. On representations made by the Council, however, the rationing machinery was kept available so that in the event of any setback in prices it could be made to function again without delay.

Closer organisation among wool growers was also among the objectives of the Wool Council. At the time of its appointment in 1930, there were two leading co-operative wool producers' associations in the Union, the National Wool Growers' Association, known as the N. W. G. A. and originally confined to the Orange Free State, and the Farmers' Co-operative Wool and Produce Union, known as the F. C. U., a flourishing organisation with branches at Port Elizabeth, Durban and Cape Town, as well as a large warehouse at East London. There were also in existence a number of smaller co-operative associations, and the proposal urged by the Wool Council was the incorporation of these in the N. W. G. A. Actually it proved that this latter body had to undergo re-organisation and readjustment of its monetary affairs, and it was not till April 1932 that it was able to make a new start, with an additional 2,000 members, and a grant of £4,000 from the Wool Council. This grant is largely utilised for

provision of instruction in wool classing, etc. In fact both this Association and the Farmers' Co-operative Wool Union endeavour to educate wool farmers in the business of wool production and its proper classing and sorting. The F. C. U. is definitely a co-operative selling organisation and handles some 50 per cent, of the Union clip, charging rates lower than the ordinary brokers' charges. There is undoubtedly a strong link between the Wool Council and the N. W. G. A., while the F. C. U. stands apart and has lately assumed an attitude of criticism.

The Wool Council established in 1931 a Wool Information Bureau and at the British Empire Wool Conference held in Melbourne in June 1931 (1), the supply of information by weekly cable from the Australian Woolgrowers Council to the South African Wool Council was definitely agreed. In fact recognition of the advantages to be gained by consultation and exchange of information in the common interests of the wool countries is among the most valuable aspects of the work of the Wool Council.

On the abandonment of the gold standard by Great Britain in October 1931, and the subsequent decision of the Union Government to retain the gold basis, exporters of any South African commodities to the United Kingdom or to other countries also "off gold" found themselves obliged to take prices which in South African currency stood at disastrous figures. The Government found itself compelled to come to the assistance of producers by the issue in December 1931 of regulations for the payment of subsidies on most of the Union exports. On wool exported or sold for export, the rate ultimately fixed for the subsidy payment was 25 per cent. on the proceeds of the first sale, the benefit of the subsidy applying to any sales made on or after 1 July 1931. As a further measure of relief the Wool Council suspended the wool levy for a year as from 1 February 1932. It may here be added that although the basis of the wool subsidy payments was modified subsequently to the abandonment of the gold standard by the Union Government during the first week of 1933, the wool exporter is still receiving a subsidy of 1*d.* per lb.

It has already been stated that the formation of the Wool Council in 1930 had been regarded as the first step towards compulsory regulation of the industry. It was however not until September 1932 that any formal move was taken towards the introduction of legislation for marketing control, although on various occasions discussions had been held between the representatives of the Wool Council and those of the selling trade. The wool brokers in fact constitute a very important group in South Africa, and it is a fact of some significance that whereas in Australia 29 brokers handle three million bales of wool, in South Africa the export of about one million bales employs 67 brokers. The Wool Council had undertaken not to prosecute a public campaign among wool growers without first consulting the brokers, and expressed anxiety to secure the collaboration of the wool selling trade. However at a meeting held in August

(1) The Report of this Conference is summarised in the *Monthly Bulletin of Agricultural Economics and Sociology*, November 1931, pp. 361-363.

1932, the delegates of the selling trade finally declared themselves opposed to legislative measures, and accordingly the Wool Council decided in September to submit its proposals to the wool growers with a view to obtaining some assurance of their support before approaching the Government to ask for legislation.

The proposals of the draft Bill included: the statutory establishment of the Wool Council; the establishment and registration of the wool brokers associations; the setting up of a National Wool Committee to consist of the Chairman and members of the Wool Council together with five representatives of the brokers, such Committee to have the initiative in any matter affecting the control of the wool clip as well as of wool marketing. The National Wool Committee, or strictly the Governor-General, acting on the advice of the Committee, may thus make regulations prescribing: the quantity and description of wool which may be offered at any place or places at any time or during any period as determined; the method or methods under which the sale of wool in the Union shall be conducted; the conditions regulating the operations of wool brokers; the nature and form of statistical data and information regarding stocks, market prices, etc., which it shall be compulsory for sellers and buyers of wool to supply for publication or for use in the general interests of the industry. As regards these proposed powers of the National Committee, the Council indicated that it was prepared to consider any reasonable modifications. The publication of these proposals elicited in October a statement of views from the South African Wool and Mohair Brokers Association, the principal brokers' organisation. The purport of this statement was to urge the wool grower to support the formation of a National Committee consisting of an equal number (eight of each) of farmers and brokers, and to require a two-thirds majority of this body for recommendation of any legislation. On the other hand the executive of the National Wool Growers' Association in September had accepted the draft measure unanimously and urged its branches to interest themselves actively in the promotion of the Bill, and the South African Agricultural Union at its annual meeting at end of October followed suit by recommending the Government to introduce legislation on the lines proposed by the Wool Council. The brokers however issued a further circular which appears to have influenced opinion among wool producers, and a very considerable divergence of view was voiced throughout the Union.

In view of the difficulty of assessing the opinion of wool growers, from the resolutions passed at meetings of very varying size in different parts of the country, and attended in many cases by persons who were not wool growers, the Wool Council decided at their meeting in February 1933 to refer the matter first to the congresses of the four provincial wool growers' associations, and then to the National Wool Growers' Association, the executive of which had already, in September 1932, accepted the Wool Council's proposals. The resolutions passed at these congresses are to be taken into consideration before submitting the measure to the Minister of Agriculture. As the Wool Council has so far no statutory powers and is a purely advisory body, this was generally felt to be the right procedure.

The first of the congresses (1), that of the Cape Province association was to be held on April 12, and as the opposition appeared from the separate meetings to be particularly strong in this province, the result of this meeting is considered likely to be critical. On the other hand the Transvaal and Orange Free State growers appear on the whole to be in favour of the measure. It is the contention of the brokers that the views of the wool growers have been already sufficiently ascertained from the meetings that have been held and that it is clear that the majority are against the proposals.

It has been the generally accepted view that the highly organised and completely self-governed Australian system of marketing wool through brokers on central markets is on the whole satisfactory to growers and adequately protects their interests. The organisation is undoubtedly remarkable; the handling of some three million or more bales of wool during the season at the different ports, the magnificent stores and show floors where the admirably prepared wool is handled and displayed, the careful attention and expert services rendered to clients, and finally the attendance of buyers from Great Britain, France, Germany Japan and other countries of the Northern Hemisphere, all create an impression which is striking if not unique among the world markets. There have however recently been indications that it is felt that the overhead charges of such a marketing system may be too high, and may possibly constitute one of the factors swelling growers' costs, and adding to the difficulties of the situation caused by the fall in prices.

It was the pressure of these difficulties taken as a whole that led in August 1932 to the request made by the Chairman of the Australian Woolgrowers' Council for the appointment of a Wool Inquiry Committee which was followed by a decision of the Federal Cabinet to hold such an enquiry. A representative Committee was accordingly appointed.

The report of this Federal Wool Inquiry Committee was published late in November of the same year. Its findings in relation to costs, including those incurred after the wool leaves the stations, mainly restate the facts and arguments that have been repeatedly adduced by growers. Briefly the Inquiry showed that average typical costs of representative growers under present good season conditions (1) may be reckoned as follows per lb. of wool:

	d.
Working expenses, excluding all interest . . . . .	6 <sup>3</sup> / <sub>4</sub> per lb.
Annual maintenance and average drought expenses . . . . .	1 <sup>3</sup> / <sub>4</sub> " "
Cost at sheep stations, excluding all interest . . . . .	8 <sup>1</sup> / <sub>2</sub> " "
Rail freight and brokers' charges . . . . .	1 " "
Average cost when sold . . . . .	9 <sup>1</sup> / <sub>2</sub> " "

(1) At this meeting a recommendation was passed that, in view of the opposition of a large percentage of growers, the Bill should be postponed for one year to allow of further discussion. A similar resolution was passed by the Natal Wool Growers Congress.

(2) The evidence was taken from all the States of the Commonwealth and covers 668 properties carrying 8,000,000 sheep.

Interest actually paid, and, attributable to wool only, averages  $1\frac{1}{4}$  *d.* per lb. of wool. Such payments, however, are made at the expense of maintenance (upkeep, repairs etc.), and in other cases interest is not being paid. Interest calculated at 5 per cent., on the value of land required to run (*i. e.*, pasture), a sheep, *viz.*, £3 per acre, is  $4\frac{1}{2}$  *d.* per lb. of wool. At this figure total wool costs must average not less than 14 *d.* per lb. of wool at the point of sale *allowing nothing for management* or for the special risks of the industry.

As regards "working costs" it was shown that reduction, amounting to 25 and even 33 per cent., had been effected in shearers' and station hands' wages. The report urges that the lowest possible interest rates on borrowed capital should be charged to the wool industry and that the Federal land tax on wool producing properties (1) should be substantially reduced if not abolished or at least suspended. In this connection it should be noted that the Committee is convinced that neither over-capitalisation nor high land values have had any material effect in causing the crisis in the industry. As regards other costs "outside fences", a strong recommendation is made for reduction of rail freights. The railways are State-owned, and the Committee recommend that the example of Western Australia in reducing wool rates by 30 per cent., should be followed. Reductions are also recommended in handling and selling charges.

The crucial question of marketing control is approached by the Committee with the following preface: "The present system of directing the sale of the clip is substantially sound, but in view of the Committee's conclusion that the present price of wool does not meet the cost of production nor enable the growers to maintain their properties, meet interest charges or obtain any profit from their operations, it is considered that the present critical position warrants the establishment of special executive machinery for speedy action."

The recommendation accordingly follows that:

(a) a Commonwealth Wool Executive be constituted by the Australian Woolgrowers' Council (after a new election of its personnel), this Wool Executive to include one growers' representative from each State and the Chairman of the Council, together with two representatives of the National Council of Wool-selling Brokers;

(b) the Commonwealth Government take to itself power to prohibit the export of wool, except on conditions of minimum reserve price or otherwise as may be prescribed, provided that this power shall be exercised only at the request of the Commonwealth Wool Executive.

It will be noted that in comparing the above recommendations with the proposals put forward by the Wool Council of South Africa, in the first place the South African allocation of seats for the brokers is much larger, but on the other hand the proposed South African National Wool Committee would have

(1) The effect of the Federal Land tax, according to evidence given in February 1933 before the Royal Commission on Taxation, has been to impose a charge ranging from 10s. 3*d.* per bale of wool produced on a 3000 sheep property to £4. 4*s.* a bale on a 50 000 sheep property. The average price of wool per bale for the last three years has been about £11. In November last a reduction in the Federal Land Tax was announced amounting to one third of existing rates.



greater power to interfere with the operations of brokers. In the second place, the Australian proposal specifically includes the assumption by the Government of power to prohibit the export of wool sold under conditions not approved by the advisory executive, whereas the Union scheme aims merely at regulating the times and places of sales, the quantities and descriptions of wool to be offered, methods and conditions of sales, etc.

It is of interest that the Australian Wool Enquiry Committee also gave consideration to the alternatives of a loan to wool growers until prices recover and of a bounty in some form, but rejected both.

It is probably to be regarded as an indication of the highly conservative attitude of the industry in Australia, that whereas in South Africa, as has been seen, the proposal for a National Wool Committee has met with considerable, although by no means unanimous, support from the growers, in Australia the councils of the two leading associations of pastoralists, the Graziers' Federal Council and the Australian Woolgrowers' Council, led the way in January 1933 by passing resolutions opposing the formation of a wool executive committee as proposed in the report of the Inquiry Committee. These important bodies also expressed definite opposition to any assumption of powers by the Commonwealth Government to prohibit, even if only on the recommendation of the proposed wool executive, the export of wool below a minimum reserve price. The Chairman of the Australian Woolgrowers' Council further stated that the original idea in calling for an inquiry was that a small executive should be appointed, representing but not superseding both growers and brokers.

In both countries the brokers, or the selling trade, present an absolutely united front in opposition to the proposals.

In spite of the undoubted strength of this opposition to measures of market control or regulation, there is among the more far-sighted of those engaged in the industry a distinct tendency to recognise that the interests of Australian and South African wool growers are in many respects identical, and that concerted action might be advisedly taken for regulation of sales, especially of Merino wool, for which product the two countries together hold a veritable world monopoly

C. H.

### **Measures taken for the Improvement of the Live stock and Meat Industry in Australia and in the Union of South Africa.**

The conditions of the meat industry in South Africa have certain features in common with those of the more fully developed industry in Australia; and in both countries there is at present much discussion of proposals for a better organisation of the meat export trade. A comparative statement of some of the problems in regard to the industry in these two countries may accordingly not be out of place.

Australia and the Union of South Africa are alike in having tracts of territory, very large relatively to the total inhabitable area in each case, suitable for live stock farming, and moreover from the prevailing semi-arid conditions suitable only for this type of farming. It is therefore in no way surprising that these

countries should become exporters of live stock products. In the world trade in wool, Australia and South Africa are of premier importance, and both hold an important position in the export of hides and skins. The development of the overseas trade in meat encountered naturally far more difficult problems of transport, and at the present time it cannot be said even for Australia that a leading position is occupied, while in South Africa a beginning only may so far be noted, together with an extraordinary determination alike on the part of the Government and of the interests concerned to build up a successful export trade.

The figures of the world trade in meat (excluding pig products) during the years 1930 to 1932, showing Australia and South Africa in comparison with the South American countries and New Zealand in this respect, will serve to illustrate the position.

As the New Zealand beef export figures are comparatively very small, and in South Africa lamb and mutton exports are only just beginning to be developed, returns relating to these exports are not included in the following tables.

It will be convenient to show the exports directed to the United Kingdom separately from those directed elsewhere. The returns are shown in each case for the calendar year, except for Australia where the returns are for the twelvemonths ending 30 June of the corresponding year.

*Exports of Beef for years 1930 to 1932 (quarters of beef).*

	South American countries (viz Argentina mainly but incl Uruguay and Brazil)		Australia		South Africa including sup- plies from S. Rhodesia, S W Africa and other ad- joining territories export- ed through Union ports, to United Kingdom and to Italy (1)
	To U. K.	To other ports	To U. K.	To other ports	
1930 . . . . .	6,132,879	1,423,000	539,506	586,758	257,025
1931 . . . . .	5,922,456	882,000	656,485	420,207	167,400
1932 . . . . .	5,446,852	550,000	750,122	289,949	118,300 (2)

N. B. — Quarters of beef are graded according to whether the weight is over or under 150 lbs.

*Exports of Mutton 1930-32 (carcasses).*

	South American countries (incl Patagonia)		Australia		New Zealand	
	To U. K.	To other ports	To U. K.	To other ports	To U. K.	To other ports
1930 . . . . .	1,909,104	247,000	632,514	147,460	2,557,326	3,987
1931 . . . . .	1,275,136	257,000	719,341	100,207	2,276,084	negligible
1932 . . . . .	1,080,341	96,000	1,168,700	108,955	2,836,754	„

(1) Under the Italian Army Meat Contract.

(2) The diminution in the S. African export figures for 1931 and 1932 is largely due to the prevalence during a part of the period of foot and mouth disease in some areas of S. Rhodesia, with consequent embargo on movement of slaughter cattle and export of meat.

*Exports of Lamb 1930-32 (carcases).*

	South American countries (Incl. Patagonia)		Australia		New Zealand	
	To U. K.	To other ports	To U. K.	To other ports	To U. K.	To other ports
1930 . . . . .	4,945,920	nil	1,964,937	148,104	7,146,146	10,123
1931 . . . . .	5,377,625	"	2,054,813	53,888	8,192,529	823
1932 . . . . .	4,405,882	"	3,203,654	50,921	8,455,029	560

For the purposes of this note, exports of canned beef, meat extracts, etc., are not taken into consideration, although the great importance of these products for the economy of the meat trade is recognised to the full in the South American countries, and to a less extent in Australia.

It may be added that the Australian beef supplies come mainly from Queensland and the Northern Territory. New South Wales and Victoria account for more than two-thirds of the lamb and mutton supplies to the United Kingdom from Australia.

From the above tables it will be seen that Australia is greatly out-distanced in beef exports by the South American countries, and that, although the Australian mutton exports of 1932 show a slight excess over those of South America, the New Zealand mutton export is more than double of either. The Australian lamb exports begin to approach the South American figure, but are again far outstripped by the enormous lamb export from New Zealand, where climatic conditions are much more favourable for fat lamb production. The South African figures are at present relatively insignificant, and the question is almost entirely one of possible future developments, in view of which organisation is being attempted.

In establishing any comparisons, it has to be kept in mind that the South American shipments include a large proportion of chilled meat, while those from New Zealand, Australia and South Africa are essentially of frozen meat, the export of chilled meat from these countries being so far scarcely more than experimental. Meat which has been chilled, *i. e.*, subjected under special conditions to a low temperature gradually reduced over a period of 48 hours or so to just below the freezing point of water, tends to preserve the appearance and flavour of fresh meat to a degree not attainable with the process of simple freezing, and hence is in greater demand and commands higher prices. It is this superiority in the product as well as the regularity and size of shipments that gives the lead on the international markets to the South American exporters of beef. The chilling process involves a much improved and scientific technique and also a higher expenditure on plant, and it is only in recent years that its introduction into Australia and South Africa has been attempted, as in neither country is the capital invested in the industry large as compared with that at the disposal of the South American "packing" firms or companies. It is now recognised that the

development of the export of chilled meat is of great importance to both countries. So far greater experimental success has been achieved in South Africa, and small regular shipments of chilled meat from certain ports are now contemplated. From Australia the length of the overseas journey is undoubtedly a severe test, and the stage of experimental shipments is hardly yet successfully passed.

Although this is not the place for any full statement or discussion of the meat agreements reached by the Imperial Economic Conference at Ottawa in 1932, some reference to the effect of the meat agreement in restricting Australian meat exports during 1933 cannot be avoided, and may serve to throw light upon the general problem of regulation of shipments. Such regulation is part of the programme of the proposed Australian Meat Export Council of which an account will be given later.

The outstanding fact influencing the formulation of the Ottawa meat agreement was that *production of meat has overtaken the effective demand*, partly in consequence of changes in dietary, partly for other reasons connected with the economic crisis. There was also the fact that largely owing to the closing of European markets, Great Britain had become the only remaining worth while market for imported meat. As a result the British market had become overloaded, there was a very large accumulation of frozen meat in cold store in Great Britain, and in consequence an almost unprecedentedly low level of prices.

The remedy proposed by the Ottawa agreement to the situation was the restriction not only of foreign (*i. e.*, South American) meat shipments but also of Dominion meat shipments during the calendar year 1933.

As regards Australia the Commonwealth Government undertook by the terms of the settlement :

(1) to use its best endeavours to limit the export of frozen beef to the United Kingdom during 1933 to an amount exceeding the exports during the season 1931-32 by not more than 10 per cent. ;

(2) that the export of mutton and lamb to the United Kingdom during 1933 will not exceed the quantity imported from Australia by the United Kingdom during the peak year 1931-32.

The limitation of " foreign " or South American supplies included a limitation of chilled beef imports into the United Kingdom to the total volume of the year ended 30 June 1932, the lowest level since 1925, and a progressive restriction over a period of 18 months of imports of foreign frozen beef, mutton and lamb.

It was originally intended that all restrictions should begin from 1 January 1933, but in view of the serious accumulation of meat in cold store and afloat it was later felt necessary to limit also shipments in November and December 1932, alike foreign and Dominion. The result was a rise of wholesale meat prices in Great Britain, followed at once by an advance in Australia of fat stock values, and consequently an extension up to nearly the end of December of lamb slaughtering which usually decline after October. Since the Australian mutton and lamb exports had been limited by agreement in November and December to 90 per cent. of the shipments for the corresponding months of 1931, the result was an exceptionally heavy carry forward of lamb and mutton into 1933. In fact the stocks of lamb and mutton in cold store in Australia, including meat loaded

on vessels not yet sailed on 31 December, amounted to some 1,170,000 carcasses. Now by agreement the exports of lamb and mutton to the United Kingdom for 1933 are not to exceed the total for the season 1931-32, *i. e.*, 4,372,000 carcasses, of which this heavy carry over alone represents nearly 25 per cent. On the other hand Australian exporters have to face the fact that the larger proportion of the year's shipments naturally fall in the months from August to December, *i. e.*, following on the new season, and it is essential to the industry to protect the interests of graziers already breeding lambs for the export of those months. Accordingly the Federal Government, after consultation with meat exporters and pastoral interests, took the immediate step in January of issuing instructions that clearances of mutton and lamb to the United Kingdom during the three months ending 31 March should not exceed 900,000 carcasses, and followed this before the end of March by a similar restriction for the second quarter of the year. Deducting this export of 1,800,000 carcasses from the year's quota of 4,372,000, a total of 2,572,000 is thus left which may not be exceeded during the second six months of the year. This is actually some 200,000 carcasses less than the quantity shipped to the United Kingdom between 1 July and 31 December 1932 a quantity that would have been larger still, if it had not been for the November-December restrictions imposed. It seems not impossible that the final result will be another heavy carry-over of mutton and lamb into 1934.

It will be seen that there is thus a strict programme of regulation of meat shipments, so far as the United Kingdom is concerned, in force in Australia for 1933. As regards the actual machinery, allocations of the various proportions of the whole quota as well as of the three-monthly quantities have been made for each State, New South Wales and Victoria leading (38 and 50 per cent. respectively). These State allocations are again divided between individual shippers or factories on a defined basis.

The value of the meat export of Australia is smaller than the values of the other leading export commodities, *viz.* wool, wheat and dairy produce, these three taken together in fact accounting for some 70 per cent. of the Australian export values. On the other hand, as with the dairy produce, a large proportion of the meat grown is consumed within the country. The per capita consumption of meat in Australia is decidedly in excess of that in Great Britain or in the United States, and has been reckoned at a little over 200 lbs. per head, of which 17 lbs. only represents pork products. Approximately the consumption of beef, mutton and lamb may be regarded as from four to five times as much as the export surplus, or in other words from 80 to 84 per cent. of the total annual production of meat is consumed by the population of Australia. The importance of the meat industry for the country would thus appear to be based as much on the internal demand as on the export trade. It is however the development and prosperity of the export trade that form the main object of the proposals for organisation.

The subject is not a new one in Australia. From 1922 to 1926 an Australian Meat Council was in existence, with the functions of general promotion of the industry especially in respect to the overseas trade, representation of the interests of graziers to shipping companies, etc. It was definitely a producers' organisation

and was financed by advances from the Federal Government which were to be repaid out the proceeds of levies imposed by legislation on stockowners in the various States. This legislation was passed by Victoria, South and Western Australia, and in New South Wales and Queensland was made conditional on a periodical poll of graziers which in both States in 1926 gave unfavourable results. The Council further alienated the graziers by proposals for the formation of a meat export central board. It was accordingly wound up in July 1926 and although in the same year proposals were brought forward for the establishment, as advisory bodies only, of an Australian Meat Board as well as of State Meat Boards, there proved to be no support for the formation of a central body.

From 1930 onwards the need for closer organisation was increasingly realised, although the initiation of any effective measures with this object seems to have been impeded especially in New South Wales by some considerable conflict of interests between graziers, the slaughtering industry and the meat exporters. The first move towards concerted action was due to the initiative of the Graziers' Federal Council, which early in 1932 called on the Federal Government to summon a Conference to consider the possibility of organising the industry in Australia. This Conference met in Melbourne at the end of June and was attended by delegates from the State Graziers' Associations, the Queensland Cattle Growers' Association, the Meat Exporters' Associations, the South Australian Meat Board and the New South Wales and Queensland Meat Industry Boards. The main subject under discussion was the establishment of a Federal Meat Control Board, such as exists in New Zealand; the functions contemplated being those of encouraging improved grading and better methods of transport, handling and treatment, and of conducting propaganda for increased and improved production. No conclusion was then reached other than the appointment of State Committees to consider further the advisability of establishing such a Board, with power to report to the Federal Government. In the meantime the outcome of the Ottawa Conference, although not so definitely advantageous to the Australian meat export trade as had been anticipated in some quarters, at least involved a distinct assertion of the position of Australia in the United Kingdom trade, and is undoubtedly proving a stimulus to improved organisation and orderly marketing. In January 1933 the Federal Minister of Commerce summoned a further Conference to which the producers were invited in the proportion of 11 to 5 meat exporters, as follows: New South Wales, three growers and two proprietary meat exporters; Victoria, three growers and two exporters, one proprietary and one co-operative; Queensland, two growers and one proprietary meat exporter; South Australia and Western Australia, each two growers; Northern Territory one grower. The representation of the exporters was subsequently slightly increased.

It should be noted that, although all parties concerned have become agreed on the need for organisation of the meat export trade, there has been all along a decided opposition, mainly on the side of the exporters but also from a section of the graziers, to the idea of establishing a body with actual powers of control of overseas marketing or even of regulation of shipments. This opposition had been evident at the Conference of July 1932, and was among the reasons

that led to the referring back of the proposals to State Committees. The same marked divergence of view was apparent at the Conference of January 1933. The resolution was brought forward by the President of the Graziers' Association of New South Wales, who had represented the Australian graziers at the Ottawa Conference, and may be quoted in full:

" That, as the present wholesale prices of meat are at a level which has created a grave depression in the live stock industry, and which if continued is likely to bring about a serious decline in production and serious injury to the meat trade, it is essential that steps be taken for a improved price situation and a more orderly marketing of supplies, to which end it is imperative in the interests of the meat trade as a whole that an Australian Meat Export Council be created, having, inter alia, the following powers :—

- (a) to fix and enforce standards for the grading of meat intended for export;
- (b) to regulate the shipping of meat;
- (c) to popularise Australian meat products overseas by advertising or other means.
- (d) to create agencies overseas and in Australian States;
- (e) to assist in the development of canning or processing of meat;
- (f) to borrow money and to make advances;
- (g) to impose a levy on all meat exported from Australia, not exceeding maximum charges to be prescribed by regulation;
- (h) to do all things necessary for building up and expanding the export of meat and meat products. "

As regards the grading question, the proposer of the motion had recently reported to his Association the result of some observations made in England, showing that Australian export trade was suffering from the multiplication of brands, the faulty grading of lambs, and in particular the shipping of " summer " lambs, or lambs produced late in the season and of inferior quality owing to the heat and absence of green feed.

The powers given are undoubtedly wide, and those relating to regulation of shipments were in particular certain to be challenged in some quarters; and in fact objections have already been raised.

It is significant of the difference of opinion prevailing that a clause giving the Council power also " to supervise and lay down regulations for the sale and marketing of meat overseas " was included in the original draft, but was removed, owing to strong representations made by some among the producers' representatives, before submission to the meeting. By inadvertence, however, the clause appeared in the reports of the proceedings in the daily press, so that an explanatory statement became necessary.

On the suggestion of the Chief Executive Officer of the Australian Council for Scientific and Industrial Research, the resolution was amended to include power to deal with production and preservation from the point of view of scientific research. In addition, after a long discussion the proposer agreed to insert the words " entirely free from political or Government control " after the words " Australian Meat Export Council. " The resolution in this form was agreed to by 19 votes to 6, the dissentients representing proprietary meat exporters.

It may be noted that one of the difficulties in the way of organisation has been a want of agreement on the means of financing any proposed body. The general principle of a levy had however been adopted by the General Council of the Graziers' Association of New South Wales at a meeting towards the end of 1932, a decision which probably tended to influence general opinion on the matter.

Voluntary organisation of the industry having been thus agreed upon, it remained to draw up the constitution of the proposed Council. Briefly the constitution was approved by the delegates on the following lines.

In the first place a poll of producers is to be taken to determine whether the establishment of a council is desirable; the number of stock entitling a producer to a vote being 300 sheep, 100 cattle or 100 pigs. (The proposal was at first for 500 sheep, but the representative of the Farmers' and Settlers' Association of New South Wales was influential in effecting reduction in the interests of the small producer).

The Australian Meat Export Council is to be a statutory body consisting of 16 members as follows: one nominee of the Federal Government; ten nominees of producers, *viz.* two from each of the States of Queensland, New South Wales and Victoria, and one from each of the States of South Australia, Western Australia, Tasmania and one from Northern Australia; five nominees of exporters, *viz.* one member from each of the three principal meat-exporting States as above, one to represent the remaining States, and one to represent co-operative meat-exporting companies. Naturally the nomination of members will take place through the various accredited State organisations of primary producers or of meat exporters respectively. The Chairman is to be an elected producers' representative and to have a casting vote in addition to his own vote. Members are to hold office for two years and to be eligible for re-election. The maximum rates for levies were also fixed provisionally at one penny per quarter of frozen or chilled beef, and one penny per carcase of mutton, lamb, veal or pork.

It will be evident that in Australia the producers are now definitely asserting their interests in respect of the meat industry, as well as their prior claim to representation on the controlling organisation.

It has been stated that in South Africa a beginning only can be noted of development and organisation of the meat export trade. In view of the fact that for some time past the head of cattle owned by Europeans and natives in the Union have been more than ten million and since 1929 have exceeded 10,500,000, (as compared with 11,700,000 in Australia) the quantities of beef and beef products are extraordinarily small. There has in fact been a somewhat tardy recognition of the possibilities in respect of this branch of the live stock industry. The tradition of the country favoured the production of a hardy type of cattle suitable for traction and transport and able to utilise the natural rough pasturage of semi-arid regions. Although there has been a more or less continuous introduction of improved Dutch or English breeds, largely for dairy purposes, provision of the necessary supplementary feedstuffs has not kept pace, and indeed climatic conditions in many areas make the production of forage crops and the improvement of pastures undertakings of great difficulty. Soil deficiencies also exist tending



to under-development and even to disease among livestock. In addition, with a European population that long remained below two million, the demand for prime or even good beef was limited, whereas the farmer could always rely on the internal market for maize, the staple food of the six million or so of the native population and largely consumed also by the Europeans.

About 1928 or rather earlier a few far-sighted agriculturalists began to urge that combined efforts should be made for the development of a beef cattle industry in the Union with a view to the building up of a beef export trade (1). A Government Mission of Enquiry was sent in that year to Argentina for the purpose of investigation of methods pursued on the farms and at the ports. A separate Division of Animal Industry was shortly afterwards established in the Department of Agriculture and a definite programme of propaganda has been followed by this Division in conjunction with that of Agricultural Education and Extension.

In the latter half of 1930 the Government introduced a Cattle Improvement Bill, of which the chief provisions were: proclamation of certain areas as cattle improvement areas; enforcement of the sale of slaughter cattle on a live weight basis; introduction of a levy to be used *inter alia* for the encouragement of the export of beef and beef cattle. Owing to want of support it was decided in February 1931 to postpone legislation, but the subject continued to receive the close attention of the Department of Agriculture and of all responsible for forming opinion on live stock questions.

In August 1931 a Conference of meat producers at Bloemfontein convened by the South African Agricultural Union appointed a special Committee for drafting proposals in conjunction with the Department of Agriculture for the benefit of the meat industry. This Committee in January 1932 urged the imposition of a levy for subsidising export trade, and the proclamation of cattle improvement areas, and asked for legislation.

During the Parliamentary session of 1932 a short Act was passed, published on 2 June in the Government Gazette, establishing a Meat Trade Control Board which came into existence on 1 August. This Board consists of three members, the Secretary of Agriculture, a representative of the stock farmers, and one of the meat selling trade. Among the powers that may be exercised by this Board are: regulation of the number of slaughter cattle to be transported by rail from any given area to any other, and of the numbers to be sold or offered for sale on any market; fixing of maximum prices, and imposition of a levy. In addition the Board has power to recommend to the Minister of Agriculture any steps that may be considered necessary or advisable for the meat trade, and has advisory powers in regard to any matter referred to it by the Minister. The Board on appointment undertook a tour for the purpose of study of the Union's principal markets, the avowed policy being one of non-interference where conditions are found to be satisfactory.

(1) Prof. H. D. Leppan's work "The Agricultural Development of Arid and Semi-arid Regions, with special reference to South Africa" published in 1928 did much to stimulate farming opinion in this direction.

It was fully recognised that such a measure was not in itself adequate to the programme of amelioration under contemplation, and early in August 1932 the Department issued a pamphlet with the title "Livestock and Meat Industry Draft Legislation" intended for the careful consideration of the farmers' organisations. Suggestions and criticisms, as well as assurances of support, were invited, and it was understood that if the draft proposals received the general support of the farming community legislation would follow in the course of the next session of Parliament.

These proposals included the establishment of an expanded Control Board of eleven members including two sheep or goat farmers and two cattle farmers, one pedigree cattle breeder, one representative of each group of meat exporters, wholesale and retail butchers, as ex-officio advisory members, the Chief of the Division of Economics and Markets and the Director of Veterinary Services and Animal Husbandry. (1) An officer of the Department of Agriculture, nominated by the Minister, was to act as chairman. The Minister also has power to refer back to the body or association concerned any nomination of a representative in his opinion not suitable or unqualified for the position, and under certain conditions himself to make the appointment.

The powers of the proposed Board included: the imposition of a levy on all cattle or sheep slaughtered at any recognised abattoir, the levy not to exceed 2s. per head on cattle over six months, and 6d. on cattle under six months old and on all sheep and goats; payment of bounties to persons exporting meat, in accordance with grade of meat exported; general improvement of marketing conditions and publication of market information and advisory power. The Board may advise the Minister as to restriction of the number of butchers (wholesale or retail) in any town if the existing number is considered to be in excess of requirements, special regard being had to the position of any co-operative organisation of live stock producers that may exist. The proposed Board will also have the same powers as the existing Board in regard to the fixing of maximum numbers of cattle, sheep or pigs, or quantities of meat that may be transported by rail in or out of defined areas during any given period, and of the numbers of animals that may be sold during any period at any specified market. Maximum prices may also be fixed by proclamation.

The proposals also included provision for collecting the levies, and definition of illegal practices affecting the trade. An important chapter dealt with the improvement of cattle by the proclamation of stock improvement areas following on the recommendation of meetings of cattle farmers, and the sale of slaughter cattle by live weight. The Minister of Agriculture is empowered on the recommendation of the Board to advance funds out of sums specially voted by Parliament to enable slaughter stock co-operative societies or companies to erect cold storages under approved conditions.

It will be seen that the proposals are very comprehensive, and are not, as was the original 1930 Bill, confined to the cattle industry alone. There is in

(2) Later the Director of Agriculture, Department of Native Affairs, was added to the number of advisory members.

fact provision for further extension in this respect, and it is clear that the objective is the improvement and development of the live stock and meat industry in all its branches.

The reception given to the proposals by farmers' organisations was decidedly encouraging. A conference of over 150 meat producers from all parts of the Union was specially convened at Bloemfontein by the South African Agricultural Union within a week of the publication of the proposals. The meeting was addressed by the Secretary for Agriculture who explained that the problem was briefly to increase the returns from live stock and improve the live stock of the Union, and that the solution of the meat problem must be sought in export which must be made an attractive proposition through the payment of bounties. As regards internal trade, too many persons were engaged in trading and the restriction of butchers' licenses was essential. The meeting discussed the scheme in detail and finally accepted it with certain amendments, of which the most important was the raising of the levy on cattle from 2s. to 4s. Among other amendments was that empowering the Minister to purchase or hire existing cold storages as well as to advance funds for the erection of new storages. The meeting was fully representative of the Cape and Free State producers, but there was only a scanty representation of the Transvaal and Natal. Early in September a meeting of Transvaal meat producers also expressed agreement, the main objection raised being in regard to the power of the Minister to reject nominations to the Board. This power is however regarded as a necessary safeguard, and although the objection has been raised on several occasions no modification has been admitted. Of the two other meetings held in September, the annual congress of the Cape Province Agricultural Association approved the proposals with the increase in the levy, and urged the establishment of a meat canning industry and also provision of loans to municipalities for the purposes of the proposed legislation; while the annual meeting of Shorthorn Breeders in Bloemfontein expressed approval with reserve as regards the Minister's power to reject nominations.

A full recapitulatory discussion of the draft legislation again took place at the Congress of the South African Agricultural Union held in Durban in October, and the meeting formally requested that the legislation should be introduced into Parliament in the session. This may be regarded as the virtual acceptance by the farming community of the proposals with the approved amendments. It is however clear that considerable difference of opinion exists as to the possibility and advisability of control of the Union internal markets. It was also made evident that some definite recognition of the South African Agricultural Union was desired in connection with nominations to the proposed Board.

It will be noted that the Secretary for Agriculture was present at most of these meetings and that every possible endeavour was made to explain the objects of the proposals and to meet criticisms. The initiative in South Africa has come from the Government, and not as in Australia from the large producers' organisations. The fact is that in South Africa there is an absence or comparative weakness of specialised associations of graziers or meat producers.

The South African Agricultural Union with its provincial branches is a Union of farmers of all types and its discussions usually cover so large a range of subjects that concentration on effective resolutions is apt to be sacrificed. The strong lead taken by the Union Government would seem accordingly to be of particular value to the industry.

The Bill introduced into the Union Parliament early in February 1933 is in essentials identical with the draft proposals, incorporating the approved amendments. The membership of the Board is raised to 13 by the addition of another representative of the selling trade and, as an advisory member, the Director of Native Agriculture. Of the ten voting members there will thus be five farmers or breeders and four representatives of the trade, with the chairman who must be an officer of the Department. From the increased levy funds are to be made available for improvement of local marketing of slaughter stock. On the other hand meat and animals below a specified grade are to be excluded from benefit under export bounty. Special provision is made for the recognition and financing of co-operative organisations handling meat. The Bill has met with some opposition in the House and has been referred to a Select Committee before second reading.

The welcome accorded to the Government proposals by the farming community in South Africa was accompanied by a spontaneous move on the part of the meat producers for the development of co-operation in the meat trade. It is considered that the producer would gain from direct contact with the large selling centres of the Union and the improved abattoirs, and for some time past proposals for a National Co-operative Meat Exchange have been under discussion. The proposal finally formed part of the agenda of the meeting of meat producers already mentioned as taking place in Bloemfontein in August 1932. It was explained that it is not the object of the Exchange to enter the retail trade, but to ensure the supply of members' stock under the best conditions to the large selling centres, and to encourage export. The intention was to form a co-operative company with limited liability, with £1 shares, no subscriber to take less than ten. Business operations were to be begun when 250,000 shares had been subscribed, but an initial payment of 2s. per share would be accepted. Some opposition was raised at the meeting, and it was urged that a district rather than a national basis was advisable, also that some further enquiry should first be made as to the measure of support probable among producers. The company was however formed, although a month later registration was refused under the Co-operative Societies Act of 1922 on account of some irregularities which had taken place at the meeting. A further conference was called in November and the scheme was successfully launched, the Registrar of Co-operative Societies and the Secretary for Agriculture being present. The Secretary for Agriculture urged that the Exchange should come to some equitable arrangement with existing co-operative organisations, and also recommended that the Exchange should make use of the facilities to be included in the new legislation for the erection of cold storages at different points.

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The problem of the relations existing between population and economy has of late assumed a special significance which is the result of several causes. Among these are the phenomenon of unemployment, the restrictions that have been placed on international migration, the reversal, in many countries, of that tendency to internal migration which has been an accepted fact since the middle of last century, and finally the indications in areas of small or family farming in Europe of a pressure of population which is causing a certain anxiety. In this brochure the writer, who is an authority on demographic questions, makes a special study of the relations between economic development and the fall in the rate of increase of population.

It is regarded by the author as fundamentally established that it is a multiplicity of factors, acting and reacting as causes and effects, which brings about the reciprocal influence exercised between growth of population and economic development. The direction and the force of these individual factors are liable to great variations as between different periods and different nations, so that the effect cannot be understood if the single factor is taken in isolation but only when its tendency is considered. Whether this tendency proves a determining one or otherwise, depends on the extent to which other factors are effective.

It is only by examination of all possible combinations of the single factors, or tendencies and counter-tendencies, that an insight can be gained into the relations that really exist.

Whereas the older economists (Ricardo, Malthus, J. S. Mill, and others) visualised the problem mainly as that of the great increase of population, the interest now lies in the consequences of a regression in or a stationary position of the rate of increase of population. It requires no demonstration that the growth of population exercises a quite extraordinary influence on the economic situation. What however is also self-evident — although unfortunately in practice it is not often recognised — is that account must be taken, not merely of the numerical increase of the population, but of the increase in purchasing power, mental outlook, dietary, standard of living, and likewise of its objectives and aspirations. On our own times economic development is dependent to a far greater extent than formerly on these factors. This is clearly indicated by the writer in his discussion of the effects of the regression or stationary position of rate of population increase alike on economic life, the labour market, migration, building up and movement of capital, the marketing possibilities for the products of the different branches of industry or farming, the internal and the world market, and on the occupational grouping of the population.

PETERS Dr., Staatssekretär z. D.; Die landwirtschaftliche Berufsvertretung. Berlin, Deutsche Verlagsgesellschaft, 1932, 120 S.

[The basis of this work is to be found in an opinion voiced in the spring of 1932 by a Committee appointed to enquire into the present conditions of the vocational representation of the German farmer. The author was himself chairman of the Committee, and the guiding idea of the work is expressed in the following sentence with which it opens: "There is a widespread conviction in farming circles, which is increasing in strength under pressure of the general crisis, that the present form of our vocational organisation is wanting in unity and in independence, and that it is

moreover much too costly." The object of the writer is to prove this assertion by quoting facts and figures.

In the first instance a general outline is given of the development of the social and economic conditions of German agriculture up to the abolition of serfdom. This forms the historical background against which the legal and economic structure of the vocational organisation of agriculture may be clearly distinguished. As early as the time of the Prussian *Landes-Kultur Edikt* of 14 September 1811 the formation of agricultural societies, probably on the initiative of A. THAER himself, was contemplated. These later took shape as central agricultural associations or unions which were the first organisations for vocational representation of German agriculture. Their character was that of associations formed rather for purposes of technical agriculture than with economic objects and their membership was mainly drawn from the large landowning class. When in 1894 the Chambers of Agriculture were founded, these independent associations which had been subject to a certain measure of State supervision were dissolved.

In the meantime a whole series of other agricultural organisations had appeared in consequence of the process of differentiation of social conditions which went on in the country during the course of the 19th century. Thus in 1862 the German peasant farmer associations (*Deutsche Bauernvereine*) were formed. These in 1900 were amalgamated into the Federation of German peasant farmer associations (*Vereinigung der Deutschen Bauernvereine*). The object of these associations is to maintain a peasant or family farming class attached to the soil, to promote co-operation, etc. In 1885 the German Peasant Farmers' Union (*Deutscher Bauernbund*) was formed. The intention was to group all farmers in this Union but on the foundation of the Farmers' Union (*Bund der Landwirte*) in 1893 it became absorbed into that body. This Union, which up to the time of the world war was of steadily increasing importance, was in favour of the policy of protection of agriculture by tariffs. On the other hand the *Deutsche Bauernschaft* formed in 1909 out of the German Settlers' Union (*Deutscher Ansiedlerbund*), adopted free trade principles. In 1886 the German Society of Agriculture (*Deutsche Landwirtschaftliche Gesellschaft*) was founded on the model of the Royal Agricultural Society of England. After the war the German Agricultural Union (*Deutscher Landbund*) was formed in 1919 as an unofficial association of agriculture, and in 1921 it was amalgamated with the *Bund der Landwirte*, the new organisation being entitled the Agricultural Union of the Reich (*Reichslandbund*).

All these independently formed associations, as also the Chambers of Agriculture established by legislation and the voluntary union of the official agricultural organisations, viz., the German Council of Agriculture (*Deutscher Landwirtschaftsrat*), founded in 1872, do much admirable work, but it would appear that the administration expenses are not always in proportion to the activities accomplished; many expenses are incurred which have no direct relation to the interests of agriculture. In almost all these organisations there is little, if any, rationalisation of work, and the financial charges entailed upon the agricultural population are too heavy. The agricultural co-operative societies and their Central Union employ 17 million marks annually, the *Reichslandbund* 10 millions, the peasant farmers' associations 4 millions, the *Deutsche Bauernschaft* one million marks, and the other voluntary agricultural associations cost another 8 million. Thus the total cost is 40 million. The German Chambers of Agriculture in addition cost 19 million marks yearly. It is the view of the writer that here, as everywhere else, considerable economies ought to be effected. In the Prussian Chambers of Agriculture alone about two million marks or 16 per cent. of the total expenditure could be saved by a rationalisation of administrative methods.

In the non-official vocational representation of agriculture, the strength of the organisations is often uselessly dissipated to the prejudice of farming interests. These bodies ought, so far as possible, to be simplified and amalgamated, and the costs of their working should be reduced. On the other hand the Chambers of Agriculture also stand in need of reform. They must be brought into a closer contact with the members of the farming profession, and the electorate so modified as to make it possible for membership of the Chambers to be open also to farm workers. Since the existing agricultural organisations are not, for the reasons stated, always adequate to the work that has to be accomplished, the author proposes to restore the former Farmers' Union (*Bund der Landwirte*) apart however from its earlier errors of judgment.

The author's presentation of the theme is throughout characterised by a certain objectivity; he has a thorough acquaintance with his subject and writes with great frankness and sincerity. As he rightly observes, "It is essential that the criticism now made be unsparing, otherwise it fails of effect and is afraid of its own courage. When it is based on objective grounds, then it cannot be out of place and must win respect."

The procedure followed by the author, which is to establish connection between the growth of the vocational representation of agriculture and the historical position of agriculture at any given time, makes this enquiry one of high documentary value and at the same time is proof of the author's profound acquaintance with the scientific principles of modern historical research]

M. T

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# MONTHLY BULLETIN

## OF

# AGRICULTURAL ECONOMICS AND SOCIOLOGY

### CREDIT

#### **Credit Conditions and the Indebtedness of Agriculture in Central and Eastern European Countries.**

#### INTRODUCTION.

In considering the development of the need of credit for agriculture, it will be observed that it has increased considerably in recent years, partly on account of reasons which go back to facts that arose during the war period, partly on account of the new necessities of the present situation. Amongst the first must be placed above all the destruction and devastation caused by the war, which were very serious in certain regions and have not yet been completely repaired. During the war, it is well to remember, damage was done not only to rural buildings, to roads, to bridges, to embankments, and to live and dead stock, but also to the land itself, trenches being dug and defence, siege and approach works constructed; the surface of the ground was torn up over a greater or less area and to varying depths; the forests, the reserves of wood, the plantations of fruit trees were destroyed systematically or as a result of bombardment or of the necessities of defence; the herbaceous and woody crops of various kinds were also destroyed. Enormous sums were required to restore the land to a state of regular cultivation and to replace buildings, drainage and irrigation works and live and dead stock.

Another fact which has given rise to considerable need for credit is the radical transformation in the distribution of rural property which has taken place as a result of the agrarian reform in the countries with which we are dealing. By this reform a great number of small landowners has been created and they required credit for the payment of the expropriation indemnities and for the expenses of farming the lands and of making improvements.

To the second group of facts which have helped to increase the demand for credit belong the widespread and gradual process of the specialisation and industrialisation of crops, the ever wider application of the principles of agricultural chemistry and agricultural mechanics, the electrification of the country districts and, in general, the more scientific organisation and equipment of the farms.

When the world economic crisis, which is essentially agricultural, occurred, the problem became even more complex, owing to the fact that to the demand for capital for the reasons indicated above was added the demand for means to meet the new difficulties and necessities and, in particular, to carry out the transformations and adaptations rendered necessary by the new level of prices and to

organise the most remunerative methods of marketing the products. Quite a new series of credit needs has thus arisen connected with the financing of sales and the construction of elevators, warehouses, cold stores, etc. Thus to the demand for credit in support of the process of production has been added the demand for credit in support of the process of distribution, which formerly gave rise to less anxiety.

Now agriculture in many countries has not had, in recent years, the sums of which it had need, firstly because of the inadequacy of the means at the disposal of the State, and secondly because private capital generally avoids agricultural investments, which only give modest returns.

The situation of the Central and Eastern European countries is particularly delicate and difficult. Essentially agricultural countries, deriving mainly from agriculture the means of existence, they have felt very seriously the effects of the crisis. The fall of prices has reduced the profit-earning capacity of the farms to a very low level and has often resulted in loss. To give some examples according to the statistics published by the rural economy institutes of the respective countries, in Poland the net return (that is, the gross return less the farm expenses) has fallen from 103.70 zlotys per hectare (2.79 per cent. of the total capital invested) in 1929-30 to 26.96 zlotys per hectare (0.61 per cent. of the capital invested) in 1930-31; in Rumania the net return per hectare has fallen from 2,739.30 lei (4.25 per cent. of the capital invested) in 1929-30 to 830.45 (1.90 per cent. of the capital invested) in 1930-31. The decline in the foreign trade of the same countries, of the exports of which agricultural products form the bulk, has brought about a general depression. The crisis of the markets and of consumption, by rendering sale difficult, has resulted in the formation of large stocks of goods which it is difficult to liquidate.

As a consequence of the want of balance between receipts and expenditure, the indebtedness of the farmers has seriously increased. The figures relating to indebtedness, which we shall give in detail for each country, are impressive and form, so to speak, the most significant expression of the unfavourable conditions of these countries. From the available statistics it results that there was a decrease in rural indebtedness during the war and immediately afterwards, this decrease was due to the fact that at that time there were fewer demands for loans and to the fact that the debtors took advantage of the depreciation to free themselves from the charges they had assumed. Afterwards, during the phase of deflation and stabilisation, agriculture particularly felt the effects of them and indebtedness began again. In 1925-26 a new period of price fluctuation started. For agriculture, in particular, it must be recalled that the crops, once the serious post-war depression had been overcome, have increased since 1925, causing severe congestion on the world market and a fall in the price-curve, which was particularly marked in 1930 and 1931. With this contraction in the farmers' returns, the rigidity of certain items in the cost of production (wages, taxes, social charges, maintenance expenses and amortisation of buildings and dead stock) contrasts.

If, on the other hand, we examine the composition of the indebtedness, we find that that part of the debts which was contracted during the phase of

high prices is a heavy burden, on account of the instalments of amortisation and the rates of interest, on the farm budgets; another part of the debts, a not inconsiderable part, was contracted for purposes of consumption or, in any case, for unproductive purposes; in both these cases, in present circumstances, the repayment of the loans is highly problematical, though for different reasons.

As to the rates of interest, a distinction must be made between loans obtained in the field of organised credit and loans obtained on the open market. In the first case either owing to the spontaneous initiative of the banks, or to the intervention of the public authorities, may be noted a mitigation of the rates which, however, remain out of proportion to the present returns from farms, and this contributes to aggravate the burden of their debts. In the case of loans obtained on the open market, on the contrary, the price of money remains, in general, very high and often it is usurious in character. This is all the more the case when there is a scarcity of capital in the banks and the borrowers are compelled to have recourse to private individuals to obtain the funds of which they have need. The debts to private persons, being ordinarily contracted on very onerous terms, without the possibility of control which exists in the case of organised credit, represent the form of indebtedness which gives rise to most anxiety.

The co-operative organisations collaborate very effectively against usury. In speaking of these organisations it must also be noted that there is a growing tendency on the part of credit institutions to rely upon them for the distribution of loans. Taking the view that agricultural credit business carried on through the medium of co-operative societies is more certain to attain the purposes for which it is intended, the banks tend more and more to establish close collaboration with these organisations. The number of loans granted through the medium of co-operative societies, in fact, is everywhere increasing.

However it may be, the problem of indebtedness and of the conversion of onerous debts, is receiving much attention in the countries in question. Several measures, as we shall see later, have been adopted in recent years for the purpose in the different cases, of the compulsory conversion of debts, that is the reduction, by force of law, of the interest and often even of the amount of the loans, of the suspension of forced sales, of the imposition of minimum prices in the sales of expropriated property, etc. But these radical measures have generally had results contrary to what was hoped from them, since they place the financial institution in the position of being unable to meet their engagements to their depositors and to those who have supplied money to them. A state of almost complete inactivity on the part of the banks has resulted, as they have thus been compelled, sometimes, to interrupt or to limit the conclusion of new operations, just at the moment when the farmers had most need of being helped. The regrettable consequences of this form of public intervention, however justified it may be by the force of circumstances, have shown the desirability of having recourse rather to measures which respect contractual obligation, and protect the debtors without too greatly sacrificing the

creditors, such as the repayment of loans by instalments, contribution by the State to the payment of interest, etc.

In dealing with agricultural credit conditions in Central and Eastern European countries, special note must be made of the necessity which they feel, as results from recent inquiries conducted by experts in the subject (1), of a greater development of medium-term credit.

To satisfy the requirements of these countries, two forms of credit of this kind are contemplated. The first would include the loans necessary for the purchase of chemical fertilisers, of selected seeds and of various agricultural requisites, loans for the fattening of live stock, for paying the wages of labour, etc. These are the expenses which, all of them, frequently compel the farmer to sell his products at an unfavourable moment and, in particular, immediately after the harvest. This kind of credit, to be granted for a period not shorter than 9 months nor longer than 18 months, would contribute not only towards improving the situation of the grain market, but also to increasing the purchasing power of the rural producing classes, by increasing the returns they obtain from the sale of their products.

The second form of medium-term credit contemplated would include loans for agricultural and land improvements, to be granted for a period not longer, in principle, than five years. They should be intended essentially for:

- (a) the purchase of dead stock;
- (b) the purchase of live stock, particularly breeding stock;
- (c) the repair, conditioning and enlargement of buildings and, in general, any improvement capable of rapid amortisation;
- (d) to the improvement of pools, vineyards, market gardens, apiaries, etc.
- (e) the clearing of lands;
- (f) the carrying out of certain agrarian operations, such as the consolidation of scattered parcels, etc.;
- (g) the conversion of onerous debts contracted apart from credit institutions.

As may be seen, the greater part of these loans is intended for improvement of farm equipment and for rationalising the working and, in fact, for effecting a more economic organisation of the undertaking.

Now, in the majority of the countries in question, the farmers, not being able to obtain medium-term credit for the purposes above indicated, have had to have recourse to short-term credit and, not being in a position to meet their engagements within the period fixed, have often found themselves compelled to contract new loans at exorbitant rates of interest, and this has rendered their situation extremely precarious. We may add that, precisely in the present phase, it is frequently indispensable to make investments of capital which, like changes of crops cultivated and conversions of debts contracted at onerous rates, resolve themselves into decrease in the working expenses, thereby allowing the farmer to meet the fall in the prices of products.

(1) Meeting of experts of the centre and south-east of Europe. Warsaw, November 1930. Memorandum on the subject of medium-term agricultural credit.

While medium-term credit is not used or at any rate is not very frequent in certain of the countries considered, long-term credit is not always easy to obtain, partly on account of the absence or defectiveness of legislation relating to mortgages and foreclosures, and to the want of a system of land registers and of guarantees firmly established. In this case also the farmers are obliged to have recourse to various forms of short-term loans, which have to be renewed during a long period and are granted at very high rates of interest, which appreciably increase the cost of production.

But, independently of the technical or juridical defects of the organisation of agricultural credit and of the working, sometimes very cumbrous and costly, of the banks, the essential and most urgent question, at the present time, is that of capital, which is not available to the extent required in order to finance either the production or the marketing and export of products.

In the most authoritative international circles, on the other hand, agreement has been reached, after numerous discussions, on the following conclusions: (a) that the scarcity of capital presents a serious obstacle to the development of commercial relations between the industrial and the agricultural countries and that it constitutes one of the principal factors which prevent farmers from changing the crops they cultivate by giving up the cultivation of those crops of which the production is at present too abundant and adopting those crops of which the consumption tends to increase; (b) that all measures which tend to raise the standard of life in those European countries where it is at present relatively low necessarily contribute towards increasing in those countries the demand for the more valuable forms of agricultural produce, such as meat, milk, fruit, etc.; (c) that the granting of credits, more particularly in the countries where the rates of interest are abnormally high, would contribute, on the one hand, towards altering production, and on the other hand, towards bringing about an increase in consumption, two conditions equally necessary for the general improvement of the situation of agriculture; (d) that these measures would result in increasing the purchasing power of the rural populations and, in particular their demand for industrial products.

Now, having noted, in regard to the majority of the countries with which the present report deals, the impossibility of an adequate national solution of the problem of credit, which requires means with which, at present, they are not provided, the idea of an international solution has become generally accepted, that is, the idea of concerted collective action for the purpose of ensuring the passage of money from the states which possess it to those which do not possess it. Two proposals for carrying out this programme have been put forward, the one on the initiative of the League of Nations, which contemplates the formation of an International Agricultural Mortgage Credit Company for carrying on medium term and long-term credit business, the other, on the initiative of the International Institute of Agriculture, which contemplates the formation of an International Agricultural Short-Term Credit Bank. The first of these proposals is intended principally to facilitate the conversion of onerous debts and thus to relieve the burdens which weigh upon agricultural production; the second is intended mainly to facilitate the marketing of agricultural products and to maintain

the prices. Both objects are of fundamental importance for the Central and Eastern European countries, as results from the detailed examination which we shall now make of their credit conditions.

### AUSTRIA.

In Austria the institutions which supply credit to agriculture may be divided into two groups, those which supply personal credit and those which supply mortgage credit (1).

Personal credit, particularly for peasants, is supplied mainly by the Raiffeisen banks, which numbered 1,791 in January 1933. The local savings banks also grant loans on personal security to farmers, but the institutions formed and organised expressly to satisfy this demand are the Raiffeisen banks. They exist in almost all communes and grant short term loans to facilitate the working and management of the members' farms, taking account, on the one hand, of their actual needs and, on the other hand, of the degree of safety which the operation in question presents. The necessary capital for this purpose is obtained – on the basis of the unlimited liability of the members – mainly by the acceptance of savings deposits from members and other persons.

Agricultural mortgage credit business is done by three types of institution :

(1) The provincial mortgage institutions (*Landeshypothekenanstalten*), the function of which is to procure long term credit for agriculture without endeavouring to make any profit on the business ; these are public institutions guaranteed by the province;

(2) Joint stock banks and private banks, which in granting loans endeavour also to make a profit;

(3) Local savings banks, which make loans for short and medium periods on mortgage security but only for the purpose of finding a safe and lucrative investment for their deposits.

The difference between these three types of institution is not, in practice, very great as owing to the competition their rates of interest are maintained almost at the same level ; but the *Landeshypothekenanstalten* endeavour to keep the rate of interest as low as possible, and thus indirectly compel similar institutions to adopt the same policy. The only practical distinction which there is occasion to make is that certain of these institutions are authorised to grant loans for long periods by means of the issue of bonds, bearing a relatively low interest and redeemable by annual instalments according to a special plan of amortisation, whilst others only grant short-term mortgage loans, the repayment of which can be demanded.

The institutions authorised to issue bonds are the *Landeshypothekenanstalten*, certain joint stock banks and certain savings banks. But in practice the institutions which issue land bonds are at present the seven *Landeshypothekenanstalten* and the *Österreichische Kreditanstalt für Handel und Gewerbe*.

(1) Dr. F. J. SEEFRIED : Die Kreditlage der Landwirtschaft Österreichs. Agrarverlag, Wien, 1931.

Agricultural credit business is now also done by the *Zentralsparkasse der Gemeinde Wien*.

The business carried on in favour of the farmers, in 1930 and 1931, by the *Landes-Hypothekenanstalt für Niederösterreich*, which may be regarded as typical of this class of institution, was as follows :

Number of loans		Percentage of total number		Classes of borrowers	Amount of loans (Schillings)		Percentage of total amount	
1930	1931	1930	1931		1930	1931	1930	1931
2,184	2,330	18.6	17.9	<i>Kleinhäusler</i> (1) . . . .	4,593,350	4,901,250	7.4	7.0
5,252	5,808	44.7	45.2	Farms . . . . .	29,345,950	33,454,050	47.3	47.5
600	741	5.9	5.7	Undertakings of mixed character . . . . .	5,961,700	6,399,600	9.6	9.1
113	132	1.0	1.0	Separate agricultural lands . . . . .	386,700	484,900	0.6	0.7
32	33	0.3	0.3	Large properties . . . .	2,793,000	3,428,000	4.5	4.9
8,271	9,104	70.5	70.1		43,080,700	48,667,800	69.4	69.2

(1) Workers occupying small plots of land with a cottage

From this table it appears that the agricultural loans continued to increase ; they were, in fact, one eleventh larger in number in 1931 than in 1930 and one ninth larger in amount.

A study of the loans granted in 1931 to individuals by the *Landes-Hypothekenanstalt für Niederösterreich* shows that they were given for the following purposes : Conversions of short-term loans into long-term loans represent 38 per cent. of the total amount of the loans ; three tenths of the total amount were given for investments and improvements (construction and repair of buildings, industrial installations, drainage and irrigation works, planting of vineyards, etc.) ; payment of the purchase price of lands, providing for children or setting them up in business, payment of shares of property inherited account for a little more than one fifth of the total ; the remainder is partly accounted for by loans for the purchase of live and dead stock, the supply of feeding-stuffs, seeds, chemical fertilisers, agricultural, industrial and commercial installations.

The rates of interest on agricultural loans in general, although appreciably lower than during the period of inflation, are still more than double what they were before the war. The *Landes-Hypothekenanstalt für Niederösterreich* charged at the end of 1931 on loans granted by it interest at rates ranging from 7.68 to 12 per cent., including the expenses of management and the refund of the tax on the interest. The rate charged by the local savings bank was between 8 and 9 ½ per cent. In consequence of the recent reduction of the rate of discount of the National Bank, the rates of interest on mortgage loans have also been revised. They have been fixed at 7 per cent. for long term mortgage loans and at 6 ½ per cent. for loans for repairs, but these latter are only granted to a small extent. The

Raiffeisen banks, in recent years, have charged, on the average, the following rates of interest :

At the end of 1925 . . . . .	12.3	per cent.
"    "    1926 . . . . .	10.2	"
"    "    1927 . . . . .	9.3	"
"    "    1928 . . . . .	8.7	"
"    "    1929 . . . . .	8.6	"
"    "    1930 . . . . .	7.9	"
"    "    1931 . . . . .	9.03	"

The effects of the reduction of the rate of discount of the National Bank cannot yet be determined.

The rates of interest indicated are, doubtless, out of proportion to the returns from the farms and added to the taxes and the social charges render their situation very precarious. If account is taken, on the other hand, of the situation of the money market, there is no ground for anticipating a reduction of the rates of interest in the near future.

As in other countries with which we deal in this report, the indebtedness of the farmers in Austria has been increasing in recent years, as a result both of general causes and of special causes. According to the statistics of agricultural accountancy compiled by the *Landes-Landwirtschaftskammer*, the indebtedness per hectare of cultivated land for peasant farms in Lower Austria was on the average :

On 1 January 1925 . . . . .	8.37	schillings
"    "    1926 . . . . .	58.10	"
"    "    1927 . . . . .	58.19	"
"    "    1928 . . . . .	106.31	"
"    "    1929 . . . . .	121.88	"
"    "    1930 . . . . .	129.87	"
"    "    1931 . . . . .	128.47	"

Statistics for 1932 are not yet available, but it may be estimated that on 1 January 1932 the indebtedness per hectare amounted to 139.23 schillings.

If to these figures are added the statistics compiled by the Accountancy Offices of the other States of the Confederation, it may be calculated that for peasant farms in the whole of Austria the average indebtedness was 91.43 schillings on 1 January 1927 ; 120.69 schillings on 1 January 1928 ; 143.20 schillings on 1 January 1929 ; 179.30 schillings on 1 January 1930 and 189.40 schillings on 1 January 1931. Allowing the same percentage of indebtedness per hectare for large estates, we arrive at a total indebtedness for the whole country of 900 millions of schillings on 1 January 1928, thus distributed : Mortgage debts, 315 millions ; other debts for fixed investments, 450 millions ; current farming debts, 135 millions. In the years 1929, 1930 and 1931 the total indebtedness of agriculture in Austria amounted respectively to 1,075 millions, 1,344 millions, and 1,419 millions of schillings.



The indebtedness may also be calculated from the loans granted by credit institutions ; for the types of institution mentioned an aggregate figure is obtained of about 614 millions of schillings at the end of 1928, a figure which is lower by 236 millions than that calculated by the previous method.

Neither of these two methods of estimating the indebtedness enables us to arrive at precise results, but only at rough approximations. It is interesting, however, to note the difference in the indebtedness of different types of farm calculated for the whole of Austria by the *Niederösterreichische Landes-Landwirtschaftskammer*. The figures for 1930 and 1931 were as follow :

	Capital per hectare in Schillings		Debts per hectare in Schillings		Debts as percentages	
	1930	1931	1930	1931	1930	1931
Vinegrowing holdings . .	8,101 29	8,920 87	337 40	473 97	4.2	5 3
Holdings on which vine- growing is combined with other forms of agriculture . . . . .	4,304 48	4,205 01	157 16	222 84	3.7	5.2
Grain-growing holdings .	3,008 05	3,199 40	235.70	252 32	7.7	7.9
Grain-growing and grazing holdings . . . . .	2,737 10	2,538 90	205 50	199 48	7.5	7.8
Holdings on which forestry is combined with agri- culture . . . . .	1,590 66	1,481 00	126 10	138 20	7.9	9.3
Grazing holdings . . . .	2,628 22	2,958 52	253.13	331 38	9.6	11.2
Forestry holdings . . . .	952 92	1,080 55	57.12	81 80	5.9	7.6

Amongst the causes of indebtedness one of the most frequent in the past was the construction or repair of buildings; next came debts incurred in connection with the payment of the purchase price of lands or of the shares of inherited property; other causes, such as land improvement, works for intensifying the farming, working expenses, had diminished in importance. With the difficulties resulting, at one time, from the stabilisation of the currency, and afterwards from the agricultural crisis, new causes of indebtedness arose. In consequence of these two facts, the peasants, who form the majority of the farmers, contracted debts for purposes of consumption.

The net return, as a percentage of the capital invested in the holding, not including the interest on capital, declined, in fact, from 4.41 in 1927-28 (397 holdings studied), to 2.93 in 1928-29 (743 holdings), to 2.51 in 1929-30 (896 holdings) to 1.38 in 1930-31 (922 holdings) and to -0.40 in 1931-32 (922 holdings). The return, including interest on capital and allowing an equitable rate of interest, 5 per cent., is negative, that is, it represents a loss which increased from 0.59 per cent. in 1927-28 to 2.07 in 1928-29, to 2.49 in 1929-30 to 3.62 in 1930-31 and to 5.40 in 1931-32.

The very small returns or annual losses continually increased the demands for credit. The indebtedness accordingly came to be formed principally by loans for unproductive or only slightly productive purposes. To the latter belong, for

example, the loans referred to for the construction and repair of buildings, loans which require a long period of amortisation and do not pay the cost of the money. The comparison between the cost of the money and what is derived from its use, is precisely what indicates the gravity of the situation, since it makes it possible to determine whether the capital is economically invested or not. Now, studying the formation of the indebtedness it can be seen that the new debts were contracted, to a large extent, without a productive purpose; they represent, therefore, a lasting burden, difficult to reduce. The numerous conversions of short-term debts into long-term debts reveal the embarrassment of the rural classes. However it may be, whether the debts were contracted for temporary necessities or with a view to improving the working of the farm, it is the fact that the returns do not now suffice to pay the interest and the instalments of amortisation. The indebtedness thus increased will only be slowly reduced by the future returns of the farms. The crisis of capital and the crisis of earning capacity have together brought about the present serious crisis of credit in agriculture.

#### BULGARIA.

The Bulgarian system of agricultural credit is centred mainly in the Agricultural Bank of Bulgaria, a State institution, established by the Law of 31 December 1903, which had at its disposal on 1 January 1933 owned capital amounting to about 802 millions of levas and deposits amounting to 5,374 millions of levas. It supplies credit both for short and long terms, both directly and through the medium of co-operative societies, on which the whole agricultural organisation of the country is based.

Short-term credit takes two forms: (1) loans on the security of promissory notes; (2) loans on the pledge of movable property (warrants).

The first form is intended to satisfy temporary and occasional needs, such as the extinction of small debts, the maintenance of the family, the purchase of seeds or implements, the payment of harvest expenses, etc. In conformity with the law, loans on the security of promissory notes, without sureties, are granted to heads of families up to 5,000 levas, and with sureties, up to 20,000 levas. Such loans are for periods ranging from 1 to 12 months. The grant of these loans is conditioned by the solvency of the debtor and of his sureties, as well as by their moral qualities, which are almost as important as the object for which the loan is granted.

The loans on pledge, though classed amongst short-term loans, are by their nature medium-term loans. They are in fact repayable in one, two or three years and are granted for the more important purchases of machines and ploughing sets, for the purchase of draught animals and breeding stock; for the purchase of seeds and feeding stuffs in large quantities, etc. This kind of loan is granted up to 20,000 levas, with or without sureties. But this limit, according to the object for which the loan is asked and according to the position of the debtor — as owner of movable or fixed property — and the value of the products and stock pledged, may be extended to 50,000, 100,000, 200,000, 300,000 levas or even more. The loans in question are usually granted on the pledge of all the

movable property of the borrower and may amount at most to 80 per cent. of the value of the property pledged.

The loans on pledge represent the form most widely used; they are particularly encouraged, for they form a relatively liquid investment, being more easily repaid on the due date. In 1931, as compared with loans on promissory notes to the amount of 789,224,000 levas loans on mortgage to the amount of 387,862,000 levas and loans to the State, to the communes, etc., to the amount of 704,914,000 levas, the loans on pledge amounted to 1,410,692,000 levas.

As to long-term credit, it is mortgage credit granted ordinarily for the purchase of lands, for agricultural buildings, for improvement works, for the conversion of loans obtained from other parties than the Bank.

According to the law, these loans are only granted on the security of first mortgages and their amount must not exceed half the estimated value of the property mortgaged. The mortgage lasts for a period varying from two to 50 years.

Apart from the granting of the loans mentioned which the Bank advances directly to the farmers, it helps the rural population, as we have already stated, through the medium of the agricultural co-operative societies. With these latter, the Bank transacts the following business: (1) It opens personal credits for them on agreements based on their capital and the liability, limited or unlimited of their members; these credits are utilised in the form of overdrafts on current account on which interest is payable; (2) it grants them loans or opens current accounts guaranteed by the pledge of securities, of live stock, of agricultural machines and ploughing sets, of agricultural produce, raw and manufactured, of non-perishable goods, etc.

The productive agricultural co-operative societies also obtain mortgage credit from the Bank.

Side by side with the credit business of the Bank, co-operative credit business is done in the country, and the Bank tends to transfer short-term business entirely to the co-operative societies.

The Agricultural Bank of Bulgaria also makes advances to the State in the form of overdrafts on which interest is payable. It subscribes to the loans issued by the State and makes advances, duly guaranteed, to the communes and departmental councils. The Bank, moreover, purchases, to the order and on the account of the farmers, machines, ploughing sets, live stock and seeds, and acquires, to save them from speculators, even a part of their production; it builds elevators, warehouses and other installations indispensable for carrying on the grain-trade on rational lines and for conducting warrant-credit business.

The loans granted by the Bank and outstanding on 1 January 1933 amounted to a total sum of 5,317 million levas, this being an increase of 261 millions on the loans outstanding on 1 January 1932. The loans granted to co-operative societies alone amounted to more than 1,665 million levas (1).

(1) Dr. N. SACAROFF, *Governor of the Agricultural Bank of Bulgaria*: L'organisation du crédit agricole en Bulgarie et le rôle de la Banque Agricole de Bulgarie dans la vie économique de ce pays. In *L'Est Européen Agricole* (Official organ of the Permanent Committee for Economic Studies of the Agricultural States of Central and Eastern Europe), No. 3, Paris, October 1932. — Do.: L'activité économique de la Banque Agricole de Bulgarie en 1932. *Ibid.*, No. 4, January 1933

The Bank gives credit to 1,626 agricultural Co-operative societies, which contain 232,187 members. Besides the funds obtained from the Bank, these societies have at their disposal their own funds, amounting to 771 million levas and deposits to the amount of 494 millions. The Bank granted to them, during the course of the past year, new credits to the amount of 157 million levas.

The co-operative agricultural credit societies, for their part, advanced to their members, on the guarantee of 235,698 promissory notes, a total sum of 959 million levas.

The vine-growers' co-operative societies, numbering 18, received credits amounting to 22 million levas. New credits amounting to 39 million levas were granted to 33 co-operative rose-growers' societies. The Bank had also to intervene in 1932 in the production of cocoons, the price of which, under the influence of the world crisis and of the competition of Asiatic silk and artificial silk, had fallen considerably for two years, obliging the majority of the producers to give up silkworm-rearing. For these reasons the Bank bought 10,500 ounces of eggs, which it distributed amongst the silkworm-rearers. It possesses in 15 centres of production modern cocoon-drying establishments, with a capacity of 750,000 kilogrammes. It has also aided the silkworm-rearers' co-operative societies financially and technically in erecting their own drying establishments with a capacity of 695,000 cocoons. In 1932, the Bank bought almost the whole production of cocoons in the country at fixed prices and organised their drying and sale; they paid to the producers on this account more than 35 million levas.

Lastly, the Bank has helped the tobacco production of the country. On account of the disorganisation of the market, the prices fell appreciably and certain speculative dealers were even able to purchase raw tobacco at prices below the cost of production. To remedy this state of things, the Bank increased its support of the 22 tobacco-growers' co-operative societies and decided to intervene on the market by directly purchasing the product at prices higher than those which had been previously given. In this way, it was able to improve the prices of tobacco, which showed, after its intervention, an increase of 15 to 20 per cent. or even more. During 1932, more than 5,000,000 kilogrammes of tobacco of the 1931 crop had been collected through the medium of the co-operative societies or directly by the Bank. Of this quantity, the Bank purchased directly, at fixed prices, 450,000 kilogrammes, employing about 20 million levas in doing so. For the collection of tobacco of the 1931 crop by the co-operative societies, the Bank granted loans amounting to about 90 million levas, for the purpose of making advances to the producers on delivery of their tobacco as well as for other expenses of handling the tobacco.

It will be seen, then, that the policy of the Bank is directed principally towards reinforcing the agricultural co-operative credit and productive societies, in order that they may organise first the production and then the sale of agricultural products, and, as required, undertake the distribution of short-term credit in the villages.

In regard to the cost of the money, the Bank, in order to relieve the agricultural co-operative societies and the farmers, reduced the rate of interest during the first half of 1931, from 12 to 10 per cent. per annum for mortgage

loans and, on 1 April 1932, a further reduction was made to 9 per cent. For co-operative societies finding themselves in a difficult position owing to unsuccessful business, the rate was fixed at 7 per cent. with a period of ten years for repayment. In general, loans are granted at an interest  $\frac{1}{2}$  to 1 per cent. above the interest paid to depositors.

The extremely serious financial crisis which has taken place in the rural economy of the country in recent years, precisely at a moment when it was endeavouring to intensify cultivation, has prevented the Bank from doing a more active credit business. This business, which in the past had as its object the improvement of the rural economy of the country, the increase of the returns from it, and the carrying out of new undertakings of general utility, has had to be reduced, in certain districts, to the grant of pecuniary aid for the purpose of assuring the maintenance of rural properties and of extracting them from the bad position into which they had fallen. It suffices to note that more than 60 per cent. of the agricultural landholders have been obliged to sell their products at a price hardly sufficient to assure the subsistence of their families. The reduction of the farmers' returns renders it, on the other hand, difficult for them to repay the debts contracted in the past. This state of affairs constrained the Bank to look for means of relieving the indebted rural population. It is true that the rural landholders have not all been affected in the same measure by the crisis. The agricultural centres producing only cereals have suffered most, while the crisis was felt comparatively more lightly in the districts of intensive cultivation. The Bank has not failed to grant to a large number of farmers loans preferably intended for the repayment of debts contracted with private creditors on onerous terms, for the conversion of short-term debts into long-term debts, for the adaptation of production to the new requirements of the market, as well as for obtaining supplies of foodstuffs for the families of the borrowers and of feeding stuffs for their live stock.

But the precarious situation of the farmer is not due to the obligations assumed towards the Agricultural Bank of Bulgaria, but rather to the debts contracted with usurers and private creditors. These debts, the conditions of which were extremely onerous, are such as completely to absorb the returns of the landholders and even to render it problematical whether they could continue to farm their lands.

The position of indebtedness for the 750,000 agricultural holdings was as follows at the end of 1930.

(1)	Direct debts to the Agricultural Bank . . .	2,613,781,509	levas
(2)	Debts owed by co-operative societies to the Agricultural Bank . . . . .	1,136,581,577	»
(3)	Direct debts to co-operative societies in re- spect of money advanced out of their own funds . . . . .	494,986,241	»
(4)	Debts to individuals and to private banks, about . . . . .	1,500,000,000	»
	Total agricultural indebtedness . . .	5,745,349,327	levas

The average debt per rural holding was thus 7,619 levas and per hectare of cultivated land about 1,511 levas.

Since the end of 1930, the indebtedness, in consequence of the economic and commercial situation, has considerably increased, and it is at present estimated as being about 12,000 millions of levas (1).

The State has not remained indifferent to the situation of the indebted farmers and by the Law of 16 April 1932 (2) it suspended up to 1 December 1932 the levying of distress on landholders occupying not more than 25 hectares in respect of debts contracted prior to 1 January 1931 and not exceeding 200,000 levas, plus the amount of debts, if there are any such, contracted for the purchase of implements, up to 25,000 levas.

The credit situation remains always very critical because, on the one hand, as we have seen, there is a vast number of heavily indebted farmers and, on the other hand, the capital at the disposal of agriculture is far from even the minimum required.

According to recent inquiries, the programme for the improvement of Bulgarian agriculture would include, amongst other matters : (1) The carrying out of important works, such as irrigation, drainage, etc. ; (2) the improvement of the quality of tobacco ; (3) the intensification of the cultivation of certain industrial plants, such as hemp, flax, colza, etc. ; (4) the increase of the cultivation of fruit trees, vines and vegetables, so as to be able to compete on foreign markets by reason of the quality and prices of the products ; (5) the increase in the cultivation of forage crops for the same purpose ; (6) a greater extension of agricultural industry (hemp, flax, preserved vegetables, preserved fruit, etc.).

It is considered advisable that the farmers should more and more organise their farms on the lines indicated, by transforming them and cultivating new crops more adapted to the requirements of the market. To attain the results contemplated funds are necessary, and these at present are wanting. The State no longer has at its disposal financial resources which would enable it to develop the country by great irrigation and drainage works. These resources must, therefore, come from outside, in the form of loans, and, in order to facilitate repayment, in the form of long-term loans.

#### CZECHOSLOVAKIA.

In Czechoslovakia the organisation of agricultural credit comprises several types of institution, the most important of which is represented by the co-operative credit societies. In fact, out of 8,543 financial institutions in the country on 1 January 1931, 7,409 were co-operative credit societies, thus classified : 4,269 Raiffeisen co-operative societies (known as *Kampeličky* societies), 1,968 Schulze-Delitzsch loan banks and 1,172 other co-operative credit societies.

(1) T. C. RAPP, M. C. : *Economic Conditions in Bulgaria* (Dated April, 1932). Department of Overseas Trade. No. 517. London, 1932.

(2) *Textes législatifs* published by the International Institute of Agriculture. 1932 Series, No. 12.

The Kampeličky societies grant to their members, who are small farmers and small industrial workers in the villages, loans in cash for working capital, intended for the purchase of seeds, of fertilisers, of live stock, for the electrification of the country, for the payment of the property tax, etc. These loans are given on agreements for periods up to two years, which may be prolonged up to four years. For this purpose the societies employ a part of their deposits which, at the date mentioned, amounted to 5,246 millions of Czechoslovak crowns. These co-operative societies supply particularly circulating capital, but they are adapted to the needs of small and medium-sized farms, as they also grant loans for longer periods for the purchase of parcels of land for rounding off a property, for the construction of light buildings, for the execution of repairs and, generally, for all the lesser works of agricultural improvement (1). The operations of these banks are limited to a commune or to several adjoining parishes. The network of such banks is almost complete in Bohemia, in Moravia and in Silesia. The Schultze-Delitzsch loan banks and the district agricultural banks grant loans on bills for three to six months. The loans may be renewed for a period of three years from the day on which repayment first became due.

Credit for working capital, given on agreements or in the form of overdrafts, amounted on 1 January 1931 for the different classes of institutions which carried on such business, to 6,948 millions of crowns, of which 2,969 millions had been supplied by the Kampeličky societies.

Apart from the forms of short-term credit above described, which are the most frequent, recourse is sometimes had to credit in the form of advances on the supplies of sugar-beet to the sugar-factories and of advances on the security of growing crops (Slovakia, Sub-carpathian Russia). The latter class form the so-called green credit; immediately delivery of the crop is made, these loans are liquidated. Only exceptionally are they prolonged.

Short-term credit is also supplied to farmers in the form of goods, such as fertilisers, seeds, implements, etc., by the co-operative stores. These loans are liquidated, as a general rule, after the harvest by the delivery of products to the co-operative society; but, as these credits would immobilise a large part of the circulating capital of the co-operative societies, the societies draw bills on the different debtors. The bill bears the signature of the debtor of the co-operative society as the drawee, and that of the co-operative society as the drawer; it is issued to the order of the drawer, or in favour of the Central Purchasing Association of the co-operative societies; endorsement by the last-named makes it possible to discount the bill at the Bank of issue. This Bank, in accordance with Article 14 of the agreement between the Government and the *Národní Banka Československa* and, on condition that the liquid assets of the Bank and the monetary interest of the State allow it, grants "trade and production credit" on bills for more than 92 days, but for not more than 182 days. These bills are accepted as security for loans at a rate which, in normal times, will be only 1½ per cent. above the rate of discount. By this system, the bills of the co-oper-

(1) Dr. I. ADISLAV F. DVORÁK : La coopération agricole tchécoslovaque. Union centrale des coopératives agricoles, Prague, 1931.

ative societies have acquired the character of commercial bills and there has been opened to agriculture a source of credit on conditions adapted to the nature of agricultural undertakings.

Medium-term credit, intended specially for the purchase of more costly machines and plant, takes approximately the same forms as short-term credit, in so far as those forms admit of prolongation, that is, the form of loans renewable up to a period, for example, of four years or more, and even in the form of bills. A medium-term loan may also be granted in the form of an overdraft on current account, usually secured by a mortgage or by an inscription in the land register; such a loan is granted for a year and can be renewed. In Slovakia, co-operative credit societies grant medium-term loans, the bills drawn being inscribed in the register of mortgages.

In addition to the organised credit for working capital, of which we have spoken, there is unorganised credit for working capital, granted to farmers by private individuals, which is, in large part, a sort of credit between relations. It is estimated that the credit of this kind represents 15 or even 20 per cent. of the total amount of credit for working capital. It is particularly frequent in Slovakia and in Subcarpathian Russia.

Lastly, long-term agricultural credit is supplied in the form of mortgage credit either on the basis of the issue of bank bonds or as cash credit supplied by various institutions, which utilise for the purpose a part of the deposits entrusted to them. The nature of these deposits determines to what extent these institutions can invest their resources in long-term loans. Now, as three fourths of their deposits consist of family savings, or the savings of undertakings, deposited for long terms, these institutions can, without compromising their liquidness, employ a large proportion of their deposits in making long-term mortgage loans.

Mortgage loans in the form of bonds are granted mainly by the provincial banks of issue, which are public banking institutions. We may mention the Mortgage Bank of Bohemia (Prague), authorised to issue bonds up to a total amount of 20 millions of Czechoslovak crowns, the *Zemská Banka* (Prague), which is of interest to agriculture on account of its issues of improvement bonds, the *Hypoteční et Zemědělská Banka Moravská* (Mortgage and Agricultural Bank of Moravia), which is particularly of interest to agriculture on account of its issues of mortgage bonds, for improvement loans and, in part, for loans for the electrification of the country districts; in Silesia the *Slezský Pozemkový a Komundlní Uvěrni Ustav* (Communal and Land Credit Institution of Silesia), and the *Zemský Maloroľnický Fond Uvěrni v Praze* (Provincial Credit Fund for Small Farmers, Prague) which was established to supply personal credit to small farmers in Bohemia, but also grants credit on favourable conditions to agricultural co-operative societies and to district agricultural banks, from which it receives deposits on current account.

The mortgage banks have been obliged to adapt to present conditions the rules for determining the price of real property; the price is no longer determined mechanically as a multiple of the cadastral income, but by a strict valuation specially made in each case. For agricultural property, loans must not amount



to more than two thirds of the estimated value, not taking into account the value of the farm buildings.

As to the rates of interest, it is the Kampeličky societies which make short-term loans to farmers at the lowest rates ; they usually charge interest at  $5\frac{1}{2}$  to 6 per cent. The rate charged by other co-operative credit societies for loans on agreements and of bills varies, on the average, in the western half of the State, between 6 and 7 per cent. and in the eastern half between 8 and 10 per cent. The district agricultural banks for the most part lend at between 6 and 7 per cent. The savings banks charge on mortgage loans interest at 6 to  $6\frac{1}{2}$  per cent. and for short term credit in the form of bills, about 7 per cent. The provincial banking institutions lend at the following rates : the Mortgage Bank of Bohemia, for loans on the security, of agricultural land,  $6\frac{1}{4}$  per cent. ; the Zemská Bank, for improvement loans,  $6\frac{1}{2}$  per cent. ; the commercial banks, which only exceptionally do agricultural credit business, lend at about 10 per cent. ; the Central Social Insurance Fund for Workers and the General Pensions Institute charge for mortgage loans on the security of first mortgages  $5\frac{1}{4}$  to  $6\frac{1}{4}$  per cent.

The problem of the indebtedness of the farmers deserves special attention. According to statistics published by the State Office of Statistics, the total amount of the debts secured by mortgage on real property was, on 1 January 1930, in Bohemia, Moravia and Silesia, 30,310,441,000 crowns as compared with 27,018-869,000 crowns at the beginning of 1929, an increase of 3,291,572,000 crowns.

The total mortgage debts (in millions of Czechoslovak crowns) affected:

	1 January 1929	1 January 1930	Difference
(1) Properties inscribed in the provincial registers . . . . .	1,306	1,348	+ 42
(2) Properties mainly within urban boundaries . . . . .	11,029	12,419	+ 1,390
(3) Properties mainly in country districts	14,451	16,313	+ 1,862
(4) Mines . . . . .	232	230	— 2
Total . . .	27,018	30,310	+ 3,292

The figures relating to property situated mainly within urban boundaries included also debts secured by mortgage on agricultural properties in the towns and, on the other hand, the figures relating to property situated mainly in country districts includes also debts on the mortgage of properties urban in character (factories, hotels, etc.) The debts on the mortgage of properties urban in character but situated in the country are much larger in amount than the debts on agricultural properties situated in the towns. It is difficult to determine the amount of this excess. Account must also be taken of a certain not insignificant part of the debts which has already been paid off without the inscriptions having been removed from the registers of mortgages. The modification to be made in the figures for these two reasons is estimated by experts at from 7,000 to 8,000 millions of crowns.

Adding to the amount of the debts on 1 January 1930 under items 1 and 2, which make a total of 17,661 millions of crowns, the increase for the years 1930, 1931 and 1932, which amount to 5,700 millions of crowns, we obtain as the mortgage indebtedness on 31 December 1932, 23,361 millions of crowns which, after the deduction to be made as above indicated, becomes about 15,360 millions of crowns.

In Slovakia and Subcarpathian Russia the new mortgage indebtedness in 1929 was 700 million crowns, of which about 500 million, that is 70 per cent., affected farms. If we assume the same percentage of increase as in Bohemia, Moravia and Silesia, we obtain, for agricultural properties, taking 10 per cent. as their share of the total mortgage debts, the sum of about 4,500 million Czechoslovak crowns. Adding to this the annual increases of 1930, 1931 and 1932 amounting to 1,500 millions we obtain, as the mortgage indebtedness on 31 December 1932, 6,000 millions of crowns. If we take account, however, of the two corrections indicated above, it may be estimated that the mortgage indebtedness in Slovakia and Subcarpathian Russia was about 4,500 millions of crowns.

It appears from what precedes that the indebtedness affecting agricultural property in Czechoslovakia was, on 31 December 1932, about 20,000 millions of crowns. Dividing this sum by the total area of agricultural and forest land, that is, arable land, including hop gardens, permanent meadows, vineyards, forests and gardens, it results that the average indebtedness per hectare is 1,700 crowns.

Moreover, the State Land Office, in connection with the carrying into effect of the agrarian reform, has granted to the farmers, notably in Slovakia and Subcarpathian Russia, land credit and credit for building purposes to the amount of 100 million crowns. The farmers who have obtained land as a result of the agrarian reform are, moreover, indebted to the State Land Office to the extent of about 700 million crowns in respect of payment for the lands assigned to them.

Making the total of all the credits of which we have spoken, the following statement may be made of the total agricultural indebtedness for the whole of Czechoslovakia :

(1) Mortgage indebtedness. . . . .	about 20,000 million crowns		
(2) Organised credit . . . . .	» 7,000	»	»
(3) Other credits . . . . .	» 1,000	»	»

Total . . . about 28,000 million crowns

In this total, unorganised credit is not included.

The long continuance of the crisis has almost destroyed the profit-earning capacity of agriculture, has exhausted financial reserves and has caused the extraordinary indebtedness of the farmers above indicated. The disparity between the index of agricultural receipts and that of costs of production is very illuminating; the latter exceeded the former, at the beginning of 1932, by 57 per cent. The returns of the farmers have declined steadily since 1927.

In facts, the return per hectare, in Bohemia, for example, according to the calculations made by the State Institute of Rural Accountancy and Rural Economy—return representing the sum of the net profit of the undertaking and of the remuneration of the labour of the farmer and his family—amounted in 1925 to 1,893 Czechoslovak crowns per hectare, in 1926 to 1,896 crowns, in 1927 to 2,068 crowns, in 1928 to 1,843 crowns, in 1929 to 1,391 crowns, and in 1930 to 996 crowns; in 1931 the fall in prices was even more marked.

Nor is the capital market favourable.

From Report No. 74 (December 1932) of the National Czechoslovak Bank it results that the demands for credit made to the financial institutions could, in November and the beginning of December 1932, only partially be satisfied, and Report No. 78 (April 1933) notes that the need of long-term credit remains considerable, but the money market cannot satisfy them.

In this situation, energetic action was indispensable to alleviate the burden of interest to be paid and to facilitate the grant of further credits to ensure the continuance of production. In particular the necessity of helping the farmers overburdened with debts by a special grant of credit was recognised (1).

To satisfy these requirements, a regulation of the rates of interest, on the basis of the Law of 2 March 1933, No. 44, and in accordance with the Governmental Decree of 23 March 1933, No. 52, has been adopted and carried out in virtue of an agreement which took place in the Advisory Committee on financial and banking questions, and was embodied in the Government Order of 12 April 1933, No. 59. The new regulation, which came into force on 1 May 1933, fixes maximum rates of interest both on deposits and on loans, varying according to the province and the kinds of deposit or loan.

A bill recently presented to the Chamber by the Government amends the rules relating to judicial distraint, by extending the principles in force in the western provinces (the so-called historic countries) also to Slovakia, where, in consequence of the system in force, a vast number of sales of real property and even of movable property, has taken place without any reserve price being fixed, and this, in present circumstances, might bring about the complete ruin of the debtors. According to the new bill, the minimum bid throughout the whole territory of the Republic in sales by auction must not be less, for movable property, than half, and for real property (houses and land), than two thirds of the estimated value. Only in certain regions, where particular conditions would require it, would the Government be authorised to fix the minimum bid for movable property also at two thirds.

These are the new principles of credit policy in Czechoslovakia, principles aiming at introducing a special financial system for agriculture, which would, through the renewed confidence of the depositors, tend to lower the rates of interest charged by the Banks, thus ensuring cheap credit for agriculture which would enable the economy of the farms to be brought back gradually to a state of equilibrium.

(1) BRDLÍK Prof. Ing. VLAD.: La crise agricole en Tchécoslovaquie. *Société d'Études et d'Expansion*. Bulletin périodique, No. 85, Liège, June 1932.

## GREECE.

Agricultural credit was almost unknown in Greece until 1915, except in the new provinces, where there existed an organisation that was incomplete and insufficient for the needs of agriculture. From 1915 to 1929, that is, before the establishment of the Agricultural Bank, the National Bank of Greece had been entrusted by the State, under an agreement signed on 6 December 1914 and ratified by the Law of 20 February 1915, with the conduct of this form of credit business. But the development of Greek agricultural economy in recent years rendered necessary the establishment of an institution of which the specialised services would be in a position to supply the new and manifold needs of the farmers. In particular the agrarian reform and the settlement of refugees gave rise to a large number of small peasant farms, which it was necessary to equip and to support economically to enable the land to be farmed ; in addition, the extension of certain crops, especially tobacco, required large capital and constant assistance.

The Agricultural Bank was established, as an independent institution of public utility, to supply this assistance, by means of an agreement between the State and the National Bank, ratified by Law No. 4,332, dated 27 June 1929, and amended by Law No. 4,454, dated 9 December 1929. Its objects are :

(1) To grant loans for short, medium and long terms to farmers and to agricultural co-operative societies and in general, to invest its capital productively in agriculture ;

(2) To follow closely and to direct the work of the co-operative societies and to help their development ;

(3) To take measures calculated to improve the general condition of agriculture by spreading a knowledge of scientific methods and of agricultural technique :

(4) To assist the marketing of agricultural products and encourage their consumption in the country and abroad, and to take steps for steadying the prices of agricultural products.

On 31 December 1932 the Bank had at its disposal capital to the amount of 1,173,571,961 drachmas, formed to a large extent by a State endowment, and by 316,946,830 drachmas of deposits.

In spite of the greatness of its objects, it has succeeded, within the limits of its available funds, in accomplishing them, by granting to agricultural land-holders short-term credits (that is, credits for about 9 months) at a rate of interest varying from 6  $\frac{1}{2}$  to 8  $\frac{1}{2}$  per cent. for advances on crops and from 7  $\frac{1}{2}$  to 9  $\frac{1}{2}$  per cent. for loans on the pledge of products. In its efforts to encourage the agricultural co-operative societies, the Bank has allowed to them a rate of interest 1 per cent. lower than the rates mentioned, and, in the case of unions of co-operative societies, the rate of interest charged is 1  $\frac{1}{2}$  per cent. less.

During the year 1930, 14,814,000 drachmas were assigned to medium-term and long-term credit ; during 1931, 36,000,000 drachmas, and during 1932, 21,500,000 drachmas.

The following table gives an idea of the short-term credit business done during the years 1930, 1931, and 1932.

	1930 Drachmas	1931 Drachmas	1932 Drachmas
Loans on personal security :			
To co-operative societies . . .	638,055,651	609,986,245	519,160,560
To individual farmers . . .	259,442,739	322,431,119	316,246,535
Total . . .	897,498,390	932,327,364	835,407,095
Loans on the pledge of products :			
To co-operative societies . . .	284,520,385	194,623,919	208,197,124
To individual farmers . . .	107,086,520	90,973,817	61,431,836
Total . . .	391,606,905	385,597,736	269,628,960

From this table it will be seen that of the total credits distributed, the greater part was granted on personal security.

The decrease of about 100 millions in the loans in 1932 as compared with those of 1931 was due, on the one hand, to the excellent grain crops of 1932 and, on the other hand, to the appreciable decrease in the cultivation of tobacco due to the low price of this product.

The total sums due to the Bank on 31 December 1932 in respect of loans on personal guarantee, after deduction of sums repaid, amounted to 793,154,000 drachmas. The loans on the pledge of products, of which the balance outstanding on 1 January 1932 was 466,000,000 drachmas, amounted, taking account of loans granted during the year (270,000,000 drachmas) and of repayments (342,000,000 drachmas), to 394,000,000 drachmas on 31 December of the same year. The greater part of these loans (210,000,000 drachmas) was granted on the pledge of tobacco.

For the years 1930 and 1931 we give a statement showing how the loans on personal guarantee were divided according to the kind of crops :

	1930 Drachmas	1931 Drachmas
Cereals . . . . .	316,777,378.60	361,848,931.40
Vines . . . . .	223,321,613.65	41,317,626.85
Raisins . . . . .		149,448,664.85
Tobacco . . . . .	219,968,525.35	174,895,120.70
Olives . . . . .	26,903,330.75	28,385,864.25
Cotton . . . . .	16,508,278.00	23,239,217.50
Market garden crops . . . . .	6,169,181.55	7,453,687.60
Animal husbandry . . . . .	28,276,208.35	41,863,481.40
Chemical manures . . . . .	21,240,673.95	34,265,548.42
Miscellaneous . . . . .	38,333,200.00	69,609,239.16
Total . . .	897,498,390.20	932,327,364.13

In addition to making advances directly to the farmers, the Bank helps agriculture by financing organisations that encourage the development of agricultural production.

It allocated, in 1932, 52,000,000 drachmas for the purchase of tobacco in the Old Kingdom of Greece, 30,000,000 drachmas for the purchase of barley, 18,000,000 drachmas for the purchase of oil, 500,000,000 drachmas for the purchase of home-grown wheat, etc. The total sums granted by the Bank in 1932 amount to 1,730,000,000 drachmas as compared with 1,442,274,722 in 1930 and 1,603,113,614 drachmas in 1931.

It may be noted that the technical services of the Agricultural Bank study the agricultural situation in each region and exert their influence in order to impose scientific methods of cultivation with a view to raising the standard of individual agricultural economy. Different varieties of seeds have been imported in large quantities and distributed to the growers. High quality live stock has been imported in order to be acclimatised. Stockbreeding on a large scale has been encouraged by facilities to breeders to enable them to purchase grazing lands and to erect shelters. Vineyards destroyed by phylloxera have been replanted. Orchards have been planted, beekeeping has been strongly encouraged, etc. Even more important works, such as the draining of marshes (90,000 stremmas (1) near Arta, 200,000 stremmas in Thessaly, etc.), drainage of valleys, and systematisation of watercourses have been undertaken. The Bank also bought directly from the growers quantities of barley and rice in order that they might not be obliged to proceed to untimely sales by which they would have suffered losses, and, in the early months of 1932, the Bank had to distribute maize on credit to the value of 66,000,000 drachmas, to relieve the critical situation of the producers in certain provinces and to save the live stock, and sometimes even the inhabitants, from starvation.

But the difficulties of agriculture remain always very great, particularly because the expropriation of lands generally had to be done in haste, owing to the influx in 1922 of a million and a half of refugees, of whom 60 per cent. belonged to rural populations. Their settlement, in spite of tremendous efforts on the part of successive Governments from 1922 to the present day, had to be carried out in a precarious way. Besides the refugees, 96,000 families, particularly amongst the populations of Thessaly and Macedonia, as well as families of ex-service men, have been settled on expropriated lands. On 1,500,000 hectares expropriated, about 160,000 families of refugees and 96,000 families of the Old Kingdom have been settled. All this work still remains incomplete. The Bank which, as far as short-term credit is concerned, succeeds in placing at the disposal of the farmers sums that are barely sufficient, found itself compelled, in the matter of medium-term and long-term credit, to restrict its business for want of means. From the figures relating to the loans made to farmers by the Bank it appears, in fact, that the medium-term and long-term loans represent only a small proportion of the total investments made. The proportion in no way corresponds to the amount of the credits of this class of which

(1) 1 *stremma* = 1/10 of a hectare.

agriculture has urgent need in order to increase the gross return of the small landholders and to attain the following fundamental objects : (1) Consolidation and rearrangement of lands ; (2) carrying out of works for the improvement of installations; (3) carrying out of works for the improvement of lands; (4) increase of farming capital, in order to enable farmers to undertake, at the same time as the cultivation of the land, stockbreeding, poultry-keeping, silkworm-rearing, beekeeping, domestic industries, etc.

Banking experts estimate that the needs of Greece in respect of medium-term and long-term credit amount to at least ten million dollars. To meet the most pressing necessities in this matter, in view of the shortage of capital from which the agricultural credit institutions of the country are suffering, credits from foreign sources seem, in present circumstances, indispensable.

On the other hand, the importance of the part played in Greek economic life by the farms of the refugees, the returns from which are sufficient neither to maintain intact their productive capacity nor even to assure the maintenance of the farmers' families, is apparent from the very number of these farms which, in June 1931, amounted to 232,512, with an area of 14,762,555 stremmas. The refugee or native farmers newly settled represent about a third of the farms of the whole of Greece and occupy 39 per cent. of the total cultivated area.

Now the economic difficulties arising from the fall in the prices of agricultural products and from successive short crops, resulting from unfavourable weather conditions, have brought about, for the small landholders, a very critical position ; they have exhausted all their savings ; their property is burdened by mortgages and runs the risk of foreclosure on the part of their creditors. It is not possible for them, in fact, to release themselves from the debts contracted at a time when agricultural prices were much more remunerative than at present.

The total indebtedness of the farmers amounted, on 31 December 1930, to 8,474,363,348 drachmas (1), as appears from the following figures :

	Drachmas
Debts to credit institutions under the control of the State	1,677,302,556
Debts incident to the expenses of settling refugees in the rural districts and to the lands and dwelling-houses assigned to them . . . . .	3,757,581,000
Debts for lands assigned to native farmers directly settled by State action . . . . .	804,372,018
Taxes due to the Treasury . . . . .	235,107,774
Private debts of the farmers, about . . . . .	2,000,000,000
Total . . .	8,474,363,348

These debts represent about 50 per cent. of the average annual return from agriculture.

(1) J. S. CARAMANOS, *Director-General at the Ministry of Agriculture: Greece*. In : " The Agricultural Crisis ". Vol. I. League of Nations. Economic Committee. Geneva, 1931.

The State has been obliged to grant a moratorium to the farmers and a Law of 4 January 1930 suspended the levying of distress on rural immovable property for debts contracted by farmers for the cultivation of their lands. A bill on the settlement of agricultural debts was presented on 8 April 1933.

The aggravation of the agricultural crisis in Greece being due particularly to the economic instability of the major part of the agricultural population, resulting from the inadequacy of the returns, the effectiveness of the efforts made to overcome the crisis depends on increasing the average level of agricultural returns. Now, it only seems possible to obtain this increase if the farmer is provided with sufficient funds in the form of medium-term and long-term credit. As long as these credits are not forthcoming, the country will not be able to consolidate these farms of recent formation, and this is essential, in the opinion of the Government, not only to improve the conditions of national production, but also to ensure the maintenance of social peace (1).

#### HUNGARY.

Agricultural credit in Hungary takes the three forms of short-term, medium-term and long-term credit. The first is generally granted on the security of bills becoming due in three to six months, ordinarily bearing the signature of two or three sureties. It is mainly granted by the co-operative credit societies affiliated to the Central Mutual Credit Society of the Kingdom of Hungary. Each time that a co-operative credit society affiliated to this central institution presents a bill to it to be rediscounted, the debt based on the bill must also be guaranteed by the member society which has made use of rediscount credit.

Medium-term credit is organised, in the majority of cases, on the basis of bonds, generally against mortgage guarantee, for a period of one, two, or sometimes five years. Loans of this kind contracted after the war were, to a large extent, provided by foreign capital and granted by the Central Mutual Credit Society, which has just been mentioned. In regard to these credits, there is a considerable tendency to supervise the employment of the sum lent.

Long-term credit includes different types :

(1) Usually the loan is based on land bonds, the property which is being farmed constituting the security. The loan must not exceed 50 per cent. of the estimated value of the land mortgaged and, in the case of a forest or a vineyard, must not exceed one third of the estimated value (Laws XXXVI of 1876 and VII of 1928).

(2) Special provisions exist for long-term loans to be granted to societies for hydraulic works or for land improvement. The amount of the credits which can be granted to these societies is regulated by the law in such a way that the mortgage charge can only in exceptional cases amount to 50 per cent. of the estimated value of the property comprised in the sphere of operations of the society which has obtained the loan. The part of the loan proportionately

(1) E. J. TSOUDEROS, *Governor of the Bank of Greece* : " The Economic Situation in Greece and the Bank of Greece in 1932. " Bank of Greece, Athens, 1933.



affecting each of the properties represents the mortgage on the property, and the accessory charges burdening the property are assimilated, in regard to their collection, to the public taxes. The loans of the type indicated serve as the basis for the issue of land bonds, and the money raised thereby is devoted to carrying out works for the regulation of watercourses or of land improvement (Law XXX of 1889).

(3) Loans based on bonds are also granted to encourage and to finance land settlement, the subdivision of lands, works for the regulation of watercourses, and land improvement. These loans may amount to as much as 75 per cent. of the property mortgaged, except in the case of loans for subdivision of land, which must not exceed two thirds of the estimated value.

In regard to loans of the first and third kinds, complete amortisation takes place usually in 35 years, sometimes in 45 years. Since the war, no loan of the second type has been granted, for the need of this kind of credit has been provided for out of State funds.

The issue of land and mortgage bonds in respect of loans of the kinds above indicated can only be made when the loan on which the issue is based is inscribed in the land register relating to the property serving as security, or in regard to the second type of loan, when the loan on which the issue is based has, in fact, been paid over.

(4) The Central Credit Society has adopted a special type of loan, guaranteed by a mortgage redeemable in ten years. In this type of loan interest alone is payable in the first five years, amortisation only beginning in the sixth year.

(5) Mention must be made, in the last place, of the carrying out of the agrarian reform (1), in its financial aspect. From the beginning it was recognized that immediate payment for the lands could not be demanded from the new owners, for, in the majority of cases, they did not possess any capital. Neither at the time of carrying out the reform nor later were credit conditions such that they would have been able to obtain, through private channels, credit on reasonable terms to pay the price of the expropriated lands. The intervention of the State seemed unavoidable. Owing to the social character of the reform and the monetary conditions of recent years the State was constrained to undertake the part of intermediary. In 1928 it concluded an agreement with the Swedish Match Cartel, under which it received a loan of 36 million dollars for financing the agrarian reform on terms equivalent to a rate of interest of  $5\frac{1}{2}$  per cent. For carrying out the reform an organisation, co-operative in form, was expressly established and was placed between the old and the new proprietors, cancelling the direct relations between the two parties. The State, or rather the co-operative society acting for the State, pays to the old landowner the price of the expropriated lands, and it is to the co-operative society that the new owner pays the amortisation instalments.

(1) See IRRIG Dr. K.: *Agrarian Reform in Hungary*. *Monthly Bulletin of Agricultural Economics and Sociology*, Nos. 11 and 12, November and December 1931. International Institute of Agriculture, Rome.

The expropriated owners obtain an indemnity, the amount of which is established, either by judicial process, or by the calculation of the administrative authority. In this latter case, the factor which serves to determine the amount of the indemnity is the net return indicated by the land register serving as basis for the assessment of the land tax; for each pengő of cadastral net return to be considered, an indemnity of 60 pengös is payable. The persons to whom lands are granted repay by instalments extending over 52 years the indemnity or purchase price to be paid for the property in question. The annual amortisation payment is equal to 5.4 per cent. of the purchase price and is payable in four equal parts. Now, as the person who has obtained land is not in any juridical relation with the expropriated owner, whilst both have entered into a juridical relation with the financial institution to which the settlement is entrusted, the purchase price is transformed, for the person to whom the land has been granted, into a loan. He gives a mortgage on the land assigned to him in the course of the agrarian reform. This charge is also guaranteed by inscription in the land register.

To facilitate the opening of credits in favour of agriculture, the right has been created by Law XXII of 1930 to pledge cereals (wheat, rye, meslin and barley), stored in the growers' barns or in elevators belonging to storage undertakings, but exclusively for the purpose of guaranteeing short-term loans. The law limits the classes of creditors in favour of whom such a pledge may be given. The pledge can only be legally given by means of a public act or by an act under private seal and must be inscribed in a special register kept at the mairie. If the giving of this pledge is communicated to the insurer, it extends also to the sum which the insurer will have to pay in case of damage. If the debtor fails to repay the loan at the due date, the creditor can sustain his rights in an action at law; the debtor who acts in bad faith is liable to very heavy penalties.

The usual rates of interest charged to farmers in Hungary are as follows:

- (1) For short-term loans, from 7 to 12 per cent.
- (2) For medium-term loans, from 7 to 8 per cent.
- (3) For long-term loans based on land bonds, from 7 to 7 ½ per cent.

Four large institutions, co-operative in form, are specially engaged in supplying credit to agriculture: the Central Mutual Credit Society, the Land Credit of Hungary, the Land Credit Institution for Small Landowners, and the Association of Hungarian Land Credit Institutions. These institutions are subject to the Government. As their work is of public interest, the Treasury has contributed to the formation of their capital. They have also benefited by exemption to a considerable extent from taxes and fees. Their principal task, as we have said, is the negotiation of long-term redeemable loans and the issue of land and other bonds on the basis of such loans. From the point of view of agricultural credit the financial institutions organised in the form of limited liability companies have a certain interest in so far as they dispose of sufficient capital and include in their business the issue of land bonds as well as the granting of long-term redeemable mortgage loans which serve as basis for the issue of bonds.

The increasingly difficult situation, from the point of view of credit, in which the farmers find themselves as a result of the fall in the prices of agricultural

products clearly appears from the reports of the banks. During the year 1932, it is remarked in the report of the Land Credit of Hungary, the tendency to decline, still more accentuated than in the previous year, has had the consequence that the rural classes, in spite of their most earnest efforts, were hardly in a position to meet their financial engagements. The returns from agriculture were reduced to an unprecedentedly low level, and this state of affairs had particularly serious consequences for those who had contracted debts in times when the prices on the world market were appreciably higher than they now are. The depression of the home market and the international market had a marked effect on the work of the Land Credit, which was greatly restricted (1). The same was the case for the Central Mutual Credit Society, the co-operative societies affiliated to which, numbering 1,013 at the end of 1930 and operating in 2,618 out of the 3,433 communes of Hungary, granted, in particular, with a view to attenuating the effects of the crisis, export credits to the producers, on favourable terms and at advantageous rates. The capital employed for this purpose by the Central Mutual Credit Society amounted in 1930 to 68,289,692 pengös. The co-operative credit societies further intensified their action in organising the marketing of products; owing mainly to this action, as well as to the efforts of "Futura," a commercial share company formed by the central co-operative societies for the sale of goods, the farmers were saved from even greater losses than those which they actually incurred. The products marketed through the co-operative societies, including the business directly transacted by the "Futura," amounted to about 1,200,000 quintals to a value of 20,000,000 pengös.

In regard to the Land Credit Institute for Small Landholders, the object of which is to procure credit, at moderate rates of interest for this class, the position of its loans at the end of 1931, as compared with the position at the end of the previous year, was as follows:

	31 December 1930 Pengös	31 December 1931 Pengös
Loans in mortgage bonds (pengös) at 7 ½ per cent. . . . .	410,462.00	249,751.37
Loans for 5 years (pengös) . . . . .	1,301,290.00	478,900.00
Mortgage loans (pengös) at 8 per cent. . . . .	5,817,520.00	10,179,656.00
Provisional loans (pengös) . . . . .	792,967 00	828,922.00
Loans in mortgage bonds (dollars) at 7 per cent. . . . .	24,985,150.33	24,889,485.03
Loans in mortgage bonds (dollars) at 7 ½ per cent. . . . .	335,319.39	2,237,362.32
Parochial loans in bonds, et 7 per cent. . . . .	7,016,341.71	6,964,022.83
Advances of money for the purchase of land . . . . .	154,107.11	144,641.37
Loans on property situated at the frontiers . . . . .	930,562.83	915,287.94
Loans on the security of promissory notes . . . . .	20,823,761.58	27,016,193.27
	<u>62,567,481.95</u>	<u>73,904,222.13</u>

(1) In 1932 no redeemable loan was granted; 159 short-term loans guaranteed by mortgages were granted to a total amount of 3,413,849 pengös.

From this comparison it appears that there was an increase in the amount of the loans outstanding at the end of 1931 over the amount outstanding at the end of 1930 of 11,336,740 pengös. In consequence of the difficult economic situation, the Institute was only able to grant long-term loans, so much demanded by the farmers, to a very small extent. It discounted, in 1931, 47,973 agricultural bills of the provincial institutes, for a total sum of 105,067,424 pengös.

Better to indicate the position of the farmers we now reproduce some figures regarding the mortgage charges on landed property at the end of 1931 (1), fixing our attention on the most characteristic details of this important phenomenon. The gross charges, that is, without taking account of the amortisation payments effected, at the end of the year and the annual increase of these charges, in millions of pengös were as follows from 1925 to 1931:

Year	Total at the end of the year (2)	Annual Increase (2)
1925 . . . . .	109.9	—
1926 . . . . .	348.4	238.5
1927 . . . . .	677.9	329.5
1928 . . . . .	1,034.5	356.6
1929 . . . . .	1,567.0	532.5
1930 . . . . .	1,844.6	277.6
1931 . . . . .	2,038.0	193.4

As will be seen, it is since 1926 that large debts have been contracted and it is in 1928 that the total debts contracted during the year reached their maximum, to diminish subsequently from year to year.

The net charges at the end of the year were as follows, in millions of pengös:

Year	Total net charges
1928 . . . . .	950.4
1929 . . . . .	1,393.5
1930 . . . . .	1,570.4
1931 . . . . .	1,716.5

Of the net charges of 1931, 79.4 per cent, were in respect of loans granted by credit institutions, 4.9 per cent. in respect of other loans, and 15.7 per cent were other charges.

After the war, the mortgage debts increased at a rate three times as rapid as before the war.

The aggravation of the situation of agriculture is particularly clearly shown by the numerous inscriptions of mortgage charges imposed as a preliminary

(1) KONKOLY Dr. JULES: Les charges hypothécaires des propriétés foncières de Hongrie à la fin de 1931. *Revue Hongroise de Statistique*, No. 11, November 1932. Central Statistical Office of the Kingdom of Hungary, Budapest.

(2) Including loans granted by the Co-operative Society for the Financial Settlement of the Agrarian Reform.

to levying distress, which increased from 13.9 millions of pengös in 1929 to 19.7 millions in 1930 and 27.9 millions in 1931; by the inscriptions for arrears of taxes, which increased from 14 millions in 1929 to 21.2 millions in 1930 and to 27.6 millions in 1931, and by the inscriptions for costs of levying distress and legal expenses, which increased from 2.1 millions in 1929 to 3.1 millions in 1930 and to 3.7 millions in 1931.

According to a recent inquiry regarding loans granted by credit institutions (banks and savings banks, the central co-operative credit society and other co-operative credit societies), the amount of these loans outstanding at the end of 1931 was 1,363 millions of pengös, affecting 577,000 landowners and 5.9 millions of cadastral arpents (1); 45.2 per cent. of the landowners had obtained loans from these institutions and 37.3 per cent. of the total area of the properties was mortgaged as security for such loans. Half of the small landowners and almost half of the large landowners were indebted to the credit institutions in question. From the point of view of their area, the very small and medium-sized properties were particularly indebted on account of loans of this sort. The major part of the loans granted by the credit institutions consists of loans on the security of bills (631.2 millions of pengös, or 46.3 per cent.) and long-term redeemable loans (623.2 millions of pengös, or 45.7 per cent.). The loans on the mortgage of very small properties are the largest in amount (418.4 millions of pengös, or 30.7 per cent.); those on the mortgage of medium-sized properties come next (258.1 millions of pengös, 18.9 per cent.) followed by those on the mortgage of small properties between 11 and 50 cadastral arpents (256.8 millions of pengös, 18.8 per cent.) and those on the mortgage of large properties (249.8 millions, 18.3 per cent.).

Classifying the loans granted by credit institutions according to agricultural regions, it is found that the properties of the Alföld (the Great Hungarian Plain) are in the most unfavourable situation; they are burdened by 53 per cent. of these loans.

According to the rates of interest charged at the end of the year 1931, the interest due in respect of loans granted by credit institutions may be calculated at 134.2 millions of pengös.

Analysing the class of "other charges," 72.6 per cent. of them burdened small properties of less than 50 cadastral arpents. These properties, which are less burdened than other properties in respect of loans granted by credit institutions are, therefore, in regard to "other charges" in the most unfavourable situation. Whilst the loans in question burden mainly properties of more than 50 cadastral arpents and the medium sized properties, it is the small properties of less than 50 cadastral arpents (and particularly the very small properties) which have the most debts belonging to the class of "other charges."

The properties which have mortgage debts representing more than 40 times the net cadastral revenue have 576 millions of pengös of charges (58.2 per cent. of the total charges), of which the loans granted by credit institutions represent 370 millions of pengös, or 34.9 per cent. of all the loans. The situ-

(1) 1 cadastral arpent = 0.57546 hectares.

ation has, therefore, grown appreciably worse, particularly for the small landowners possessing less than 50 cadastral arpents, on whom the greater part (72.6 per cent.) of the increase in the charges falls.

Information is only available regarding a part of the agricultural charges other than mortgages. These are estimated at 379 millions of pengös, including debts for small sums calculated at between 50 and 60 millions of pengös. Thus, then, the total charges, mortgage and other than mortgage, on Hungarian properties may be estimated, at the end of 1931, at 2,100 or 2,200 millions of pengös. At the end of 1932 this total probably amounted to 2,300 or 2,400 millions.

It is considered that the indebted landholders would be in a less serious situation if they were debtors only of credit institutions. It is because they have several kinds of debts that the majority are unable to meet their engagements; this is why the situation causes anxiety. What particularly aggravates it is the sale of agricultural products at unsatisfactory prices and the difficulty of financing credit on reasonable terms. If the prices of agricultural products were to rise and credit conditions to improve, the situation of agriculture would become better. Until these things take place, the general opinion is that no assistance can be permanently effective.

#### POLAND

Amongst the institutions (1) which supply credit to agriculture, the State Agrarian Bank fulfils in Poland a particularly important function. It is a Government institution, which is incorporated and has a capital formed by a subsidy from the Treasury amounting, on 1 December 1932, to 130,000,000 zlotys and a reserve fund of 37,935,662 zlotys.

Long-term land credit is one of the principal kinds of business which it carries on. Such credit is granted: (1) in land bonds redeemable in 30  $\frac{1}{2}$  years, issued on the security of first mortgages, for the purchase of lands rendered available by the subdivision of large properties, to occupiers of small and medium-sized holdings, and further for agricultural expenditure such as the erection of dwelling houses and farm buildings, for the repayment of private debts contracted on onerous terms, for the payments of shares of inherited property, for other payments in cases of the division of property, etc.; (2) in bonds, redeemable in 15 years, to irrigation societies, particularly for carrying out improvements such as drainage, drying and irrigation of land, improvement of pasture land, formation and reorganisation of fish-breeding establishments, etc.

The improvement loans granted to irrigation societies are guaranteed in conformity with the provisions of the régime of lakes and rivers, according to which sums due in respect of such loans have the privilege of priority; and the loans granted to individuals are guaranteed by a first mortgage, as also are the loans in land bonds.

(1) In particular the land credit societies, the co-operative societies and the communal loan and savings banks play an important part in the organisation of agricultural credit in Poland and contribute large sums to the financing of agriculture.

The Bank also grants short-term loans, on the security of bills, for a period of several months, to supply the working capital necessary for the development of agriculture, that is loans for the purchase of chemical fertilisers and of selected seeds and loans to producers of selected seeds, butter, eggs, hops, flax, etc. The loans are distributed through the medium of local co-operative banks, communal banks and various agricultural co-operative societies.

Medium-term credit business, as we shall see, is carried on to a very limited extent.

The rates of interest on short-term and medium-term loans, which used to be between 8 and 10  $\frac{1}{2}$  per cent. have latterly been reduced to between 6  $\frac{1}{2}$  and 9 per cent. according to the class of borrower (central co-operative societies, local co-operative societies, savings banks, farmers), in consequence of the reduction in the rate of discount of the Bank of Poland. Certain special loans enjoy more favourable rates of interest, varying from 2 per cent. upwards.

Besides the operations which it conducts on its own account, the Bank conducts other business entrusted to it by the Treasury. Such business includes, in the first place, the granting of loans for purposes of general economic importance in respect of which the Government deems it desirable to grant loans out of State funds on specially favourable conditions. These are loans for the encouragement of stockbreeding, fruit and vegetable growing, consolidation or subdivision of lands, home colonisation, and the reconstruction of farms destroyed during the war. The rate of interest on the loans in question, which used to be between 4 and 5 per cent., according to the purpose for which the loan was granted, was reduced last year to between 3 and 4 per cent., as one of the Government measures for the relief of agriculture.

The task undertaken by the Bank was particularly difficult in 1931. While, on the one hand, the demand for investment loans declined, improvement works becoming less and less remunerative, the crisis, on the other hand, gave rise to new needs, for which considerable means were required. The pressing question of the conversion of debts on burdensome conditions, moreover, became of primary importance, for, as appears from the annual reports of the banks, such debts were ruining even the soundest farms. It was also important to resolve the problem of the dismortgaging of the large properties, basing the solution on a scientifically planned subdivision. The Bank could only meet all these needs to a limited extent, its action being greatly hampered by the want of capital.

What further hampered the business of the Bank in 1931 was the difficulty which it encountered in financing long-term credit operations, on account of the unfavourable situation of the stock market, both in Poland and abroad. The prolonged crisis arrested, in fact, the accumulation of capital and dried up the principal sources from which the Bank relied for funds to be invested in the bonds which it issued. The issue of bonds became, accordingly, greatly restricted. Bonds were only issued to the nominal amount of 22.6 millions, of which only 10.4 could be placed in the country itself, and the Bank was obliged itself to take up the balance of 12.2 millions.

In 1932, the issue of bonds by the Bank diminished still further. The nominal total amount of the land bonds issued was not quite 5.8 millions of zlotys.

In view of the progressive restriction of the issues the Bank, not being able to develop its long-term credit business, devoted its attention particularly to the completion of the loans granted in previous years the object of which was to enable the farmers either to complete the improvements they had begun or to fulfil their engagements regarding transactions for the purchase of land. The total amount of the loans in land bonds paid to the borrowers in 1931 was 22.6 millions of zlotys, as compared with 66.6 millions in 1930 and 109.5 millions in 1929. On the other hand the total amount of improvement loans paid in bonds was only 7.7 million zlotys.

In its anxiety to ensure the safety of the credit, the Bank adopted various measures for adapting the loans to the conditions created by the crisis. The principle was laid down that the loans granted to purchasers of land not exceeding half the estimated value must, at the same time, not exceed half the purchase price. The rules for estimating the value of buildings were amended by laying down that the estimated value must not exceed 75 per cent. of the sum for which the buildings had been insured against fire. Lastly, the minimum applied to investment loans, 2,000 zlotys, 1,500 zlotys and 1,000 zlotys, was also applied to loans for the purchase of land.

The rate of interest payable on the land bonds issued by the State Agrarian Bank is 8 and 7 per cent. and that on improvement bonds 7 per cent. The rate of interest on long-term loans amounts in principle: on loans in 8 per cent. bonds, which are quoted at 94, to 8.91 per cent., and on loans in 7 per cent. improvement bonds, which are quoted at 83.25, to 8.66 per cent.

Recognizing that these rates of interest were too heavy for agriculture, the Bank had already introduced prior to the crisis, for the class of borrowers financially weakest, and particularly for purchasers of lands rendered available by subdivision, a reduction of between 2 and 4 per cent. on the annual rate of interest. The necessary funds for this purpose were drawn by the Bank partly from additional payments received from the Treasury, partly from its own funds.

These concessions proved insufficient when the crisis came, on account of the heavy fall in the prices of agricultural products and the insolvency of the great mass of farmers. Accordingly at the beginning of 1932 the Bank applied the measures more widely with a view to: (1) a new reduction of 2 per cent. in the rate of interest for the benefit of all debtors for loans in land bonds and improvement bonds, making a total reduction of 4 per cent.; (2) the prolongation up to 1 April 1933 or 1 October 1934 of the due date of payments in arrears prior to 1 January 1932; (3) the authorisation to pay by instalment, the whole or part of the interest arrears; (4) the prolongation from 3 to 6 years of the special period during which debtors of loans in improvement bonds are exempt from the payment of instalments of amortisation and pay only the interest, thus prolonging the period of complete amortisation from 15 to 18 years; (5) the grant to debtors of loans in land bonds of a prolongation of the period of amortisation up to 30 years, within the limits of the plan of drawing by lot.

The measures applied by the Bank doubtless represent a considerable alleviation for the farmers, but they only affected a part of the agriculture of the country and could not resolve the whole of the rural financial problem. In face



of a new fall in the prices of agricultural products and an aggravation of the position of the properties in 1932, with a simultaneous diminution of the possibilities of rapidly overcoming the crisis, the general settlement of the question of the indebtedness of the farmers to the long-term credit institutions proved to be necessary, both in the interest of agriculture and in that of the institutions themselves, in order that the farmers might be able to make headway against the present phase of acute depression.

Accordingly, at the end of 1932, the Government presented to the Diet a bill for lowering the rate of interest and prolonging the periods of long-term credits. This bill was passed by the Diet and published on 24 December 1932 in the *Journal of the Laws of the Republic of Poland* (No. 115, section 950). The three decrees of the Minister of Finance published in the *Journal of the Laws* of 10 February 1933 (No. 7, sections 146, 47, 48) complete the law by laying down provisions for carrying it into effect.

In accordance with the terms of these measures, the problem of the reduction of agricultural charges resulting from long-term credit was resolved in the following manner :

(1) The interest on loans in land and other bonds granted by long-term credit institutions are reduced, according to the nature of the credit, to 4  $\frac{1}{2}$ , 5 and 5  $\frac{1}{2}$  per cent, and the rate of interest on loans granted by the State Agrarian Bank is reduced to 4  $\frac{1}{2}$  per cent. Loans granted in land bonds at a rate of 5 per cent. or less will not benefit by any reduction, nor will land bonds subscribed by public issue on foreign markets and quoted on foreign stock exchanges.

(2) The amortisation periods of loans have also been prolonged. For loans in land bonds granted by the State Agrarian Bank, as well as for the majority of agricultural loans, the prolongation is to 55 years, including the period of three years during which the debtor only pays interest ; and for loans in improvement bonds the period is prolonged to 36 years, including six years during which only interest is paid.

(3) Simultaneously with the reduction of the rate of interest and the prolongation of the amortisation period, the land and other bonds issued on the basis of the loans are converted into redeemable interest-bearing bonds, in accordance with the principles applied to the rates of interest and amortisation periods of the loans. This provision does not apply to land and other bonds (a) of the State banks ; (b) guaranteed by the treasury ; (c) on which the interest is 5 per cent. or less ; (d) placed on foreign markets by public issue and quoted on foreign stock exchanges.

(4) In regard to the State banks, that is, the State Agrarian Bank and the Bank of National Economy, the question of financing involved in the concessions indicated has been separately resolved by an Order of the Minister of Finance dated 6 February 1933, which contemplates the reduction of the rate of interest and the prolongation of the amortisation period only for land and other bonds held by public institutions, by governmental institutions and by the Treasury. The land and other bonds held by individuals will not be converted, and the difference between the rate of interest and the instalment of amortisation of these securities and the reduced rate of interest and instalment of amortisation of the corresponding loans will be covered by the Treasury.

The development of long-term credit having undergone, as we have seen, an almost complete check, the Bank will devote its attention to short-term and medium-term credit. But in this field also there has been a serious contraction of the business, due both to the want of means and to the necessity of adapting them to the new conditions. Medium-term credit was mainly based on State funds. For short-term credit the Bank will secure the indispensable means by obtaining foreign and other credits, and also by taking advantage to a larger extent of the discount of the Bank of Poland. For the purpose of improving the position of agriculture, a new conversion of short-term loans into long-term loans was carried out to an amount exceeding 70 millions. This conversion was based on a more rational distribution of the dates of repayment of the loans and on the postponement of the repayments. It afforded relief to the debtors, but at the same time it made it necessary for the Bank to limit its short-term credit business.

The short-term and medium-term loans together amounted, on 31 December 1932, to 210.5 millions of zlotys as compared with 282.2 millions on 31 December 1930. At the end of 1932. the short-term loans amounted to 87.5 millions of zlotys and the medium-term loans to 123 millions as compared with 206.2 millions and 76 millions at the end of 1930. The total short-term credits, therefore, diminished, in the course of the past two years, by 118.7 millions of zlotys, or 57.6 per cent. ; while the total medium-term credits increased, principally on account of the conversion of about 50 millions zlotys, by 61.8 per cent.

It is recognised that the aggravation of the agricultural credit conditions, in addition to the heavy fall in the profit-earning capacity of agriculture and particularly of animal husbandry, has contributed in Poland to render the situation of agriculture still more difficult. Account must be taken of the fact that the crisis came upon agriculture after a comparatively brief period of favourable conditions, during which the farmers only partially succeeded in restoring and completing the working capital and reserves destroyed by the inflation. Owing to the continuance of the crisis and to the fact that they had not sufficient resources at their disposal, the occupiers of agricultural holdings were compelled to have recourse to credit.

On account of the scarcity of funds from which Poland is suffering these loans were contracted by the farmers on very onerous conditions, the rates of interest and dates of repayment not at all corresponding to the conditions of the farming undertakings.

The following statement shows, according to the calculations of the State Agrarian Bank, the indebtedness of the farmers to the credit institutions on 1 October 1931.

*Indebtedness in respect of Short-term and Medium-term Loans.*

	Zlotys	Zlotys
Co-operative credit societies . . . . .	221,300,000	
District savings banks . . . . .	117,800,000	
Communal loan and savings banks . . . . .	14,700,000	
State Agrarian Bank . . . . .	258,900,000	
Bank of National Economy . . . . .	97,000,000	
Joint stock banks . . . . .	145,300,000	
Bank of Poland . . . . .	58,600,000	
Total, Short-term and Medium-term Loans		913,600,000

*Indebtedness in respect of Long-term Loans.*

Loans in Mortgage Bonds and Other Bonds.

	Zlotys	Zlotys
State Agrarian Bank . . . . .	339,300,000	
Bank of National Economy . . . . .	58,100,000	
Land credit societies . . . . .	464,900,000	
Private mortgage banks . . . . .	102,700,000	
Institutions of former States to which parts of the territory belonged (in liquidation) . . . . .	258,900,000	
Total, Loans in Bonds . . . . .	<hr/>	1,223,900,000

Loans in Cash.

State Agrarian Bank . . . . .	387,400,000	
Bank of National Economy . . . . .	69,200,000	
Total, Loans in Cash . . . . .	<hr/>	456,600,000
Total, Long-term Loans . . . . .		1,680,500,000
Total, Short-term and Medium-term Loans . . . . .		913,600,000
TOTAL, ALL LOANS . . . . .		<hr/> <hr/> 2,594,100,000

It is difficult to form an idea of the private indebtedness of the farms on account of the absence of statistics on the subject. This indebtedness now represents an important item ; it has grown very markedly in recent years on account of the private loans, both in cash and in goods, to which the agricultural undertakings were obliged to have recourse to a considerable extent, especially during the crisis. What renders the general indebtedness very burdensome is not only the reduced profit-earning capacity of the farms, but also the excessive charges and expenses which are laid upon the farmers by reason of the dearth of the credit itself.

The principal cause of the excessive indebtedness is not so much the absolute amount of the debts as the too high rates of interest and the unhealthy form of a great part of them.

The want of capital which was felt in the period immediately following the inflation had compelled the credit institutions who desired to assure to the farmers the necessary working capital and capital for investment to adapt the rate of interest on the loans they granted to the high rate of interest prevailing on the regular market. Thus the majority of the long-term loans granted during this period by the State banks, by the private banks and by the land credit societies were based on the issue of 7 or 8 per cent. land bonds. Taking as basis the highest quotations recognised by the State banks at which the bonds were issued, namely 82.75 and 93, the effective rate of interest on the loans was about 9 per cent. The rate of interest on short-term loans reached an even higher level. Although the rate of interest charged by the central

institutions did not exceed 9 per cent., the cost of the credit was increased by the provision for the local institutions. The rate paid by the farmers on the irregular market was the highest, for it went to between 24 and 36 per cent. and was generally usurious in character. Even during the period when conditions were favourable, the farmers could with difficulty meet these high rates of interest. It is for this reason that the state banks, which realised the excessive cost of the credits granted, endeavoured from the beginning to diminish the charges by the application of bonuses, of specially favourable rates, etc.

In order to protect the farmers from the danger by which they were threatened on the part of their creditors, the Government, desiring to avoid the sale by auction of agricultural holdings and a fall in the price of land, promulgated numerous laws for the purpose of enabling sound agricultural undertakings, which had become temporarily insolvent, to overcome the crisis. Amongst these we may note:

(1) The Law of 12 March 1932, to facilitate the payment of onerous debts burdening farms (1). In order to obtain for the owners of landed property who had difficulty in paying arrears in respect of taxes and of onerous debts, the Law authorises them, whenever the said difficulties can be resolved by the sale of the whole property or of parts of it, to proceed to the division of the property in a manner laid down by the Law itself and on the basis of certificates establishing the necessity and utility of the division proposed. It is noteworthy that this law facilitates, to a large extent, division of properties with a view to liberating them from engagements, by making the provisions of the Law on Agrarian Reform less strict. The financing of this division was entrusted to the State Agrarian Bank, which was authorised to issue, for this purpose, special 4 ½ per cent. land bonds. These bonds are not in free circulation but are accepted by the Treasury in settlement of arrears of taxes, as well as by State banks in payment of arrears of certain debts.

(2) The Law of 7 March 1932 granting facilities to farmers at times of judicial dstraint (2).

(3) The Order of 23 August 1932 on measures of protection against the consequences resulting from difficulties of payment in agriculture, which introduced for agricultural undertakings an institution of judicial supervision the function of which was to facilitate the farmers in preparing a plan for the settlement of their engagements and to give them the necessary time to put this plan into execution in agreement with their creditors. The postponement of the dates on which payments are due may be granted for twelve months to the farmer who, though in possession of sufficient means, has momentarily ceased to meet his engagements for exceptional reasons beyond his own control and anticipates being obliged to suspend payments in a near future. The postponement of the dates when payments become due is only a preliminary act to give the debtor the possibility of making arrangements with the creditor. The

(1) Textes législatifs, published by the International Institute of Agriculture. 1932 Series, No. 20.

(2) Textes législatifs, published by the International Institute of Agriculture. 1932 Series, No. 29.

arrangement, known as the "preliminary agreement between creditor and debtor," may consist in the postponement of the due dates, in arranging for repayment by instalments, in the reduction of the rate of interest or in the complete or partial cancellation of the interest, or even in the reduction of the amount of the debt.

(4) The Order of 23 August 1932 on the establishment of Arbitration Offices for questions of credit affecting small properties. The postponement of the due dates and the preliminary agreements above referred to are applicable also to small properties, but as the procedure connected with these preliminary agreements is costly for small property and rather lengthy, the Order provides for the establishment of District Arbitration Offices. The purpose of the arbitration offices is to help small landowners to obtain the postponement of the due dates or the possibility of repayment by instalments and to combat usury in in the country.

(5) The Order of 23 August 1932 amending the Presidential Decree of 29 June 1924, concerning usurious loans with a view to facilitating the courts in combating usury; the Order provides for a less strict application of the rules of procedure in establishing proof of usury.

(6) The Order of 23 August 1932 on the dividing up of mortgage debts affecting properties subdivided with a view to the repayment of burdensome debts. By regulating the preventive agreements and introducing for certain cases the compulsory dividing up of mortgage debts at the time of the sale of a part of the land, the order renders it easier for the owners to meet their engagements by means of the subdivision of the land.

None of these four Orders contains provisions to be applied generally and automatically. They require that in each particular case the initiative shall be taken by the interested parties and their object is to create favourable conditions for the conclusion of voluntary arrangements between the farmer and his creditors, in order to facilitate the satisfaction of all the creditors, without prejudice to the properties.

#### RUMANIA.

The new requirements arising out of the agrarian reform and the economic crisis have rendered the problem of agricultural credit in Rumania highly complex. In the statement of reasons presented with the Law of 19 July 1931 on the advantages granted to the associations for the improvement of agriculture in Rumania (1), the Minister of Agriculture and Lands thus expresses himself: "Our production per unit of area is too small, the quality and uniformity of the produce leaves much to be desired and the relation between the costs of production and the value of the products obtained is unfavourable, precisely because of the small quantity obtained per hectare and because of the quality, which does not correspond to the requirements of the world market. The cause of this state of affairs, which we find in many parts of the country, lies in the routine methods

(1) *Official Journal of the Kingdom of Rumania*, No. 167. Bucarest, 22 July 1931.

of work followed by the small farmers, in the absence of the vocational training and the moral effort required for the adoption of certain methods of work more adequate for present day requirements. This moral factor rendering Rumanian agriculture backward, has been aggravated by external causes, the world agricultural crisis, the burden of debts, the disproportion between the productivity of agriculture and the fiscal charges, and the terribly excessive subdivision of property. "

Now, according the opinion of Rumanian experts in credit questions, it is necessary in the first place that the peasant should be able to find financial aid under suitable conditions :

- (1) When his crop is insufficient to enable him to live and maintain his family.
- (2) When, after a bad year, he has no reserve left to buy the grain necessary for sowings.
- (3) When he wishes to replace extensive cultivation by an intensive cultivation capable of giving a net return proportionate to the capital employed.
- (4) When, particularly in view of foreign trade, he deems it necessary to produce articles of superior quality, and this would require good seeds, fertilisers, etc.
- (5) When he wishes to enlarge his holding, the typical holding of 5 hectares being too small to assure the maintenance of a numerous family.

These manifold needs of credit are ordinarily satisfied, as far as their resources will allow, particularly by the co-operative credit societies (popular banks) which numbered 4,733 in 1931 (1). These co-operative societies, as well as others existing in the country, are grouped in Federations and find in the National Office of Rumanian Co-operation their official centre of administrative and technical assistance; in the Central Co-operative Bank their financial centre, and in the Co-operative Central Association for Import and Export an intermediary for the supply of agricultural requisites and for the joint sale of the agricultural products of their members (2).

(1) These banks, which contain 995,462 members, granted loans to their members to the amount of 5,183,263,000 lei in 1931. At the same period they had 2,046,909,000 lei of paid up capital and 1,577,894,000 lei of deposits.

(2) To the Co-operative Central Association for Import and Export were affiliated, on 31 December 1932, 112 co-operative societies, including 17 federations and 37 popular banks. The federations undertake, on behalf of the affiliated societies, the following operations : (1) the purchase of implements and machines, of seeds, of fertilisers, etc. ; (2) the sale on commission of agricultural products ; (3) the organisation of the joint sale of the products of the co-operative societies and of their members ; (4) the making of advances on agricultural products intended for sale, etc. For the development of its foreign business the Central Association has secured the assistance of certain large business houses which represent its interests on the most important markets. During the years 1929 and 1930 the Central Association marketed 74,417 tons of cereals, of which about 61,000 were exported and the remainder sold on the home market. In 1932 the Co-operative Central Association for Import and Export exported 9,591 tons of wheat, 41,398 tons of maize and 14,504 tons of barley. Most of these latter operations were firm purchases and sales ; little use was made of the system of selling on credit, but in such cases advances, on which the sellers had to pay interest, were made by the federations. The subscribed capital of the Co-operative Central Association on 31 December 1932 was 8,755,000 lei and the paid up capital 6,015,918 lei.

The Central Co-operative Bank, which was established in April 1929 under the Law of 28 March 1929 on the re-organisation of co-operation, is a commercial company in which the State participates as a shareholder, side by side with a large number of co-operative societies of different kinds and of federations. The capital was fixed at 1,000 million lei; half was subscribed by the State; the other half is being subscribed by the affiliated societies (1). From 4 March 1931 it adopted, in favour of the popular banks, of the other co-operative societies and of the federations, a new system of loans, divided, according to their purpose, their amount and the length of the period for repayment, into five classes:

- (1) Maintenance loans;
- (2) Loans for working capital;
- (3) Loans for investment;
- (4) Loans for circulating capital;
- (5) Loans for the repayment of deposits.

The maintenance loans take the form of discounts and are granted for sum ranging from 3,000 to 50,000 lei per person. There are two kinds: (a) loans for agricultural works, for seeds, for repair of implements, etc.; (b) loans for personal needs, the object of which is to provide the means necessary for maintaining the family and for meeting the expenses occasioned by certain occurrences, such as births, illnesses, baptisms, trials, etc.

Maintenance loans may be obtained from the Central Co-operative Bank, by direct discount, by the popular banks of the old Kingdom of Rumania which have at least 500,000 lei of capital and by the popular banks of the new Rumanian provinces (Transylvania, Bessarabia, Bukovina and the Banat) which have at least 300,000 lei of capital and reserves. The popular banks which do not fulfil these conditions must present their bills for discount through the medium of a federation, or through another popular bank that can directly discount bills.

In 1932 the Central Co-operative Bank granted maintenance loans to the amount of 2,981,957 lei. The total amount of the maintenance loans granted by the Bank up to 31 December 1932 was 57,439,767 lei.

To popular banks which charge interest to their borrowers not exceeding 12 per cent., the Central Co-operative Bank charged 7 per cent. interest; to other banks, 9 per cent.

The acceptance of bills for discount is subject, in principle, to the following, amongst other, rules:

(1) The sum advanced to a person must not exceed one third of his productive property, that is property which directly yields income, such as cultivated land, live stock, buildings rented, etc.

(2) The debtor's ability to repay must be strictly ascertained. Repayment must be made, in principle, in six months. In exceptional cases, postponement may be allowed for a further period of three to six months. Loans

(1) On 31 December 1932, the Central Co-operative Bank had as shareholders 2,149 co-operative societies, which had subscribed capital to the amount of 81,950,000 lei, of which 62,674,575 lei were paid up.

for food, seeds, repair of implements, etc., must be repaid in between 9 and 12 months.

Loans for working capital are granted, either to co-operative societies or through co-operative societies to individuals, for the purchase of goods and requisites, machines and implements, the amortisation of which requires more than two years, as well as for the payment of rents and for advances on grain or other stored products, in which case the loans are more quickly repaid. These loans are only granted, in principle, through the medium of the federations, on the security of bills, bearing the corporate signatures with or without the further surety of the Committee of Management, and secured by a pledge agreement. The loan must be repaid at the moment of the sale of the pledge, in the case of implements and cereals; at the expiration of a year's tenancy, in the case of loans for the payment of rent, and in periods specially fixed in other cases.

The loans for working capital granted by the Central Co-operative Bank in 1932 amounted to 15,149,677 lei. Up to 31 December 1932 the Bank had granted loans of this kind to the amount of 30,573,802 lei.

Investment loans, secured by mortgages, are granted:

(1) To associations of peasants for the purchase of lands where they have deposited 50 per cent. of the price with the Central Co-operative Bank;

(2) To co-operative societies which wish to construct buildings and which possess, in addition to their lands, a liquid fund (handed over to the Central Co-operative Bank) amounting to at least one third of the cost of construction.

The interest on such loans is 9 per cent. and the period may vary between 3 and 15 years. The Central Bank had granted, up to 31 December 1932, investment loans to the amount of 436,724,240 lei.

Loans for circulating capital are granted to federations on the security of bills bearing their corporate signature, or of bills issued by the co-operative societies and discounted by the federation. These loans are intended to supply the federations with the means necessary for current business with their affiliated societies. The loans for circulating capital granted up to 31 December 1932 amounted to 951,883,812 lei.

Lastly, a special form of loan is the loan for short periods granted by the Bank to enable co-operative societies to repay deposits entrusted to them. Up to 31 December 1932 these loans amounted to 57,819,205 lei. Their object is to assure the safety and the liquidity of the interest-bearing deposits of the popular banks when there is danger of a run upon them. To restrain the tendency to invest deposits in long-term loans, for longer periods than those within which the deposits can be withdrawn, or in risky investments, the Bank has laid down the following rules for the co-operative societies:

(1) That a certain relation must be fixed between the society's own funds and the total amount of deposits accepted.

(2) That deposits shall be utilised in forms allowing of their rapid realisation.

At the present time it is difficult to insist on the application of rigid rules in regard to loans of any kind. This explains the decrease in all credit operations in 1932.



During the course of its existence (4 April 1929 to 31 December 1932) the Central Co-operative Bank has granted loans to the total amount of 1,734,285,382 lei (1).

In connection with the agricultural crisis, the Bank has for some time past been studying two fundamental problems: the obtaining of better prices for agricultural products through the organisation of joint sales and the lowering of the rate of interest on loans.

In regard to the marketing of agricultural products, the Bank has organised the financing of the grain crops with a view to introducing the system of joint sale, in collaboration with the Co-operative Central Association for Import and Export. Under this system the producers either deposit their grain, directly or through the co-operative societies or federations, in the warehouses of the Central Co-operative Bank, or load it in trucks consigned to its address or to an address indicated by it. For the grain thus deposited or consigned, they receive an advance on the security of an instrument pledging the grain and an order to sell. The order to sell may be either for an immediate sale at the price of the day, or for sale at a minimum price within a period of not less than 30 days, at the choice of the person who deposits or consigns the grain. In the case in which an order to sell at a minimum price is given, if the grain cannot be sold within 30 days at the price fixed, it will be sold at the price of the day within the 15 following days at latest. When an order for immediate sale, at the price of the day, is given, the advance will be 75 per cent. of the price of grain calculated at the Braila parity; when the order is for sale at a minimum price, fixed by the producer, the advance will be of 50 per cent. of the price of the grain, calculated in the same way.

On these advances the producers pay interest at the rate of 10 per cent. per annum for at least 30 days.

Before being stored or consigned the grain is cleaned, weighed and graded by quality.

The instruments pledging the grain, together with the orders to sell, received by the Bank from co-operative societies or federations are transmitted to the Central Co-operative Association for Import and Export, which, as soon as it is in possession of these documents, proceed to make agreements for the sale of the grain.

The advances are paid over to the producers by the federations, popular banks and co-operative societies, which for this purpose will be supplied with the necessary funds by the Bank.

Immediately after the sale of the grain by the Central Association, the Bank proceeds to the final settlement of the accounts in favour of the producers who have taken part in the operation.

The Bank intends to extend the business combining operations of financing with those of marketing also to other agricultural products, such as eggs, poultry, milk, butter, cheese, fruit, vegetables, etc. But this initiative encounters an

(1) In this total are not included either the operations on commission, nor those relating to the old Central Association of Co-operative Societies.

obstacle in the too individualistic mentality of the peasant, who does not willingly adopt collective methods of economic organisation.

In any case, for carrying out this programme, as well as in general, for the support and development of agriculture, means are required which at present the institutions which do agricultural credit business do not possess; the farmers are consequently obliged to seek on the free market the capital necessary for the cultivation of their land, and obtain it from commercial banks, from private individuals, and from their own suppliers, at exaggerated rates of interest. This is the origin of a law against usury promulgated in April 1931, in accordance with which the rate of interest must not be more than 6 per cent. higher than the official rate of discount, which, at the time the law was passed, was 8 per cent. and at present is 7 per cent.

As to the lowering of the rate of interest it must also be recalled that the Bank, since October 1930, only charges to the affiliated organisations 7 or 9 per cent. so that the individual borrowers generally pay 12 per cent. On the other hand the co-operative societies borrowing from the Bank were relieved by the spreading of the dates of repayment over long periods, having been authorised to pay their debts by annual instalments spread over 10 or 15 years and, generally, in accordance with their capacity to pay and their incomes, reduced as they are by the crisis. The action of the Bank in this field is connected with the action for the relief of agricultural indebtedness undertaken by the Government as a measure rendered imperatively necessary by the condition of agriculture.

The debts, according to official statistics (1), amount to 52,347,593,294 lei, thus distributed:

(1) Debts of owners of agricultural land possessing more than 10 hectares, 14,970,795,594 lei;

(2) Debts of owners of agricultural land possessing less than 10 hectares, 37,376,797,700 lei.

Details of this indebtedness are given in the following tables:

*Debts of Owners of Agricultural Land possessing more than 10 hectares who have made Application to Benefit by the Law on the Relief of Agricultural Debts.*

CLASSES OF DEBTORS	Number of agricul- tural debtors	Per- centage	Total area of the properties in hectares	Per- centage	Amount of the debts in millions of lei	Per- centage	Average per hectare
Up to 500,000 lei . . . . .	12,527	74.66	493,694	55.61	2,536	16.94	5,136
From 500,000 to 1,000,000 lei . .	1,747	10.37	89,479	10.08	1,668	14.14	18,641
From 1,000,000 to 5,000,000 lei .	1,996	11.85	199,600	22.49	4,692	31.34	23,507
From 5,000,000 to 10,000,000 lei .	332	1.97	66,400	7.48	2,278	15.22	34,307
Over 10,000,000 lei . . . . .	192	1.15	38,400	4.33	3,797	25.36	98,880
Total . . .	16,794	100	887,573	100	14,971	100	16,867

(1) " *Conversiunea Datorilor Agricole.* " Ministry of Justice, Service of Judicial Statistics. Bucarest, 1932.

*Debts of Owners of Agricultural Land possessing less than 10 hectares.*

REGIONS	Number of owners of agricultural land	Per-centage	Total area of the properties in thousands of hectares	Per-centage	Number of agricultural debtors	Per-centage	Total area of the indebted properties in thousands of hectares	Per-centage
Old Kingdom . . . . .	1,944,279	61.65	4,982	63.97	1,209,182	38.35	2,806	36.03
Bessarabia . . . . .	608,674	62.83	2,208	62.44	360,071	37.17	1,328	27.56
Transylvania . . . . .	1,111,754	59.49	2,252	60.93	750,928	40.51	1,463	39.07
Bukovina . . . . .	198,970	57.26	250	71.88	148,500	42.74	98	28.12
Total . . . . .	3,863,683	60.86	9,692	63.07	2,474,781	39.14	5,696	36.93

REGIONS	Number of creditors	Debts, in millions of lei, of owners of agricultural land to						Total debts in millions of lei	Per-centage
		Popular banks	Per-centage	Other credit institutions	Per-centage	Private individuals	Per-centage		
Old Kingdom . . . . .	740,340	6,211.7	35.38	7,112.3	40.49	4,230.2	24.13	17,566.2	47.00
Bessarabia . . . . .	169,041	732.6	28.88	952.9	37.50	851.4	33.66	2,536.9	67.9
Transylvania . . . . .	1,239,004	1,879.6	12.30	7,112.3	52.03	5,414.6	36.61	15,206.6	40.08
Bukovina . . . . .	170,588	231.4	11.34	580.4	28.08	1,252.4	60.58	2,067.1	5.53
Total . . . . .	2,334,072	9,061.3	21.21	16,557.0	44.30	11,757.6	31.46	37,376.8	100

As the fall in prices continued, the Government considered it indispensable to proceed to the conversion of the agricultural debts (Laws of 16 April 1932 and 19 October 1932) (1). The new landowners created by the agrarian reform having had need of investment credit and of other forms of credit were able to obtain them only at very high rates of interest. Up to 1927-28 and as long as the prices of agricultural products were well maintained, these rates of interest were bearable, but as soon as prices began to decline, the agreed charges became impossible to bear. The Agricultural Mortgage Credit Company and the Rumanian Bank of Agriculture, both established in 1931, not having sufficient resources to meet all needs, and no other solution having been regarded as possible, the relief of indebtedness became necessary.

The relief of agricultural indebtedness is based on the following principles:

(1) Reduction by between 10 and 50 per cent. of the amount of the debts, according to their nature and the length of time since they were contracted; this reduction was justified by the legislature on the ground of the usurious rates of interest that had been charged to the debtors;

(2) Reduction of the rate of interest to 4 or 5 per cent.;

(3) Repayment of the debts to be spread over a period of 30 years.

(1) Textes législatifs, published by the International Institute of Agriculture, 1932 Series, No. 28

The above-mentioned laws have been amended by the Law of 13 April 1933, establishing a moratorium for five years for agricultural debts. During this period, creditors and debtors will have the possibility of coming to an agreement for the liquidation of past debts in order to permit the resumption of credit operations, which, at present, have almost completely ceased.

To contribute to the work of the relief of agricultural indebtedness, the Central Co-operative Bank lowered the rate of interest on loans already granted to 3 per cent. The loans granted since the promulgation of the laws remain subject to the rate of interest fixed according to the nature of the loan.

From the general situation in Rumania it appears that, on account of the low returns from farms the remuneration of capital invested in agriculture and the repayment of loans cannot at the present time be assured, as they formerly were.

#### YUGOSLAVIA.

By several stages and after a long work of formation (1), a central institution for carrying on agricultural credit business in all its forms was finally established by the Law of 16 April 1929, No. 30,630. This institution, the Privileged Agricultural Bank, has a share capital of 700 millions of dinars, to which the State contributed by subscribing for shares to the amount of 120 millions of dinars.

Taking account of the situation of agriculture in the country, the Council of Management of the Bank laid down, from the beginning of its working, the fundamental bases of its credit policy. These bases are determined by the following requirements:

(1) To provide above all by the grant of mortgage loans for facilitating the repayment of the debts of the peasant farmers which, up to the time of the promulgation of the law above mentioned, placed them in a very precarious position, on account of the too brief period allowed for repayment and of the very high rate of interest.

In the period following the war, in fact, it was necessary to restore, in certain regions, the properties damaged by the war; in other regions, where the peasants had surplus capital, it was utilised in the purchase of land. But the land was often bought on credit and at prices which did not correspond to the return from it, especially when the prices of agricultural products began to fall. The peasant also incurred debts for the purchase of live stock, machines, implements, and, to a certain extent, for carrying out improvement works. Debts were even contracted as a result of calamities or, in years of bad harvest, to buy food for men and live stock, as well as to maintain in the villages the standard of life which, in periods when circumstances were favourable, was very high. All these debts, in spite of the disadvantageous conditions on which they had been contracted, were borne as long as the products of peasant farms could be marketed. Peasant farms were able even to bear fairly well the period of inflation. As the farms are cultivated mainly by the families themselves, the pressure was supported by

(1) See: The Agricultural Credit Situation in Yugoslavia. *International Review of Agriculture*, September 1928. Rome, International Institute of Agriculture.

the peasants first of all by reducing their standard of life and then by avoiding all investment of capital. But when the world crisis affected also Yugoslavia, the situation of rural property became much more difficult. The impossibility of export made the prices of agricultural products fall considerably and the disproportion between the prices of agricultural and of industrial products became great. The slight development of the towns and of industry, as well as the inadequacy of the means of transport, tended further to aggravate the situation. Agricultural indebtedness, which was estimated at 4,000 millions of dinars towards the end of 1930, has since considerably increased, owing to the aggravation of the economic crisis.

(2) To satisfy the farmers' current needs of credit by means of small loans (personal agricultural credit), within the limits of their real needs and of their solvency.

(3) To help by means of loans any action calculated to increase agricultural production, particularly the work of such organisations as co-operative societies for production and consumption (silkworm-rearers' societies, vine-growers' societies, dairy societies) and organisations for the purchase and settlement of land.

(4) To help, by moral means and by periodical inspections, the better organisation and the development of agricultural co-operative societies.

To carry out its programme the Bank grants principally three kinds of loans, namely:

- (1) Long-term mortgage loans, for periods ranging from 5 to 25 years;
- (2) Medium-term loans, for periods of from 1 to 3 years;
- (3) Short-term loans, for periods of not more than one year.

In the post-war period the importance of long-term credit, already considerable, has further increased, and a great number of applications were made to the Bank for this kind of credit, the need for which, it is thought, will increase in the future, owing to the great necessity of improvements to agricultural properties.

Next in importance comes medium-term credit, which is utilised for the purchase of live stock and of the smaller implements, for the carrying out of small improvement works, etc. This credit, which is granted by the Bank exclusively through the co-operative societies, is not far behind long-term credit in the need which is felt for it, and it shows a tendency to develop very greatly.

Short-term credit, on the other hand, is still comparatively little developed. By its nature, it ought to serve for purposes of agricultural production and trade and for operations lasting for a year at most. In the opinion of the Bank, the more intense development of this form of credit would depend:

- (1) on the reorganisation of the markets for agricultural products;
- (2) on the construction of general warehouses and elevators;
- (3) on the improvement of the means of transport;
- (4) on a clearer understanding of the nature of this form of credit on the part of the persons to benefit by it, who ought to refrain from utilising it for purposes which can only be carried out with the help of long-term or medium-term loans.

The Bank also finances the purchase and subdivision of the lands of the former large landowners, granting to the purchasers, by a rapid procedure, loans for adequate periods.

In consequence of the exhaustion of the Bank's own resources, of the impossibility of obtaining other funds by means of loans, of delays in the payment of the instalments of repayment which became due, the Bank was obliged in August 1931 to limit its operations to the loans authorised. It was decided not to receive any new applications for mortgage loans, but to receive and to consider only applications coming from co-operative societies.

During 1930 and 1931, the following mortgage loans were authorised and paid for the purposes of purchase of land, conversion of debts, construction of rural buildings and carrying out of improvement works:

YEAR	Loans authorised		Loans paid		Average amount of loans paid, in dinars
	Number	Amount in dinars	Number	Amount in dinars	
1930 . . . . .	14,390	449,713,300	10,160	327,015,300	32,186
1931 . . . . .	8,553	181,921,250	8,513	184,776,050	21,705
Total . . .	22,949	631,634,550	18,673	511,791,350	27,397

The security accepted for these loans was cultivable lands and lands with rural buildings. According to its regulations, the Bank can grant, in the case of lands mortgaged, up to 50 per cent. of their value, and in the case of rural buildings mortgaged, up to 30 per cent. But these percentages, as a measure of prudence, especially in the present situation, have never been reached.

Transactions with the co-operative societies occupy a very important place in the business of the Bank, which sees in these organisations the basis for the "soundest and most useful" agricultural credit business. Medium-term credit, as we have seen, is in fact supplied exclusively through such societies. It is granted against individual agreements of members of the co-operative societies bearing the signatures of the principal debtor and of two sureties, as well as the endorsement of the local and central co-operative organisations.

In 1930 and 1931, 105,189 loans amounting to 323,272,003 dinars were authorised, and 89,621 loans amounting to 285,151,195 dinars were paid (1). Out of a total of 4,500 co-operative credit societies existing in the country, 2,400 were in a position to take advantage of the services of the Bank; of this number, up to the end of 1931, 1,613 had received loans.

In 1931, interest at 10 per cent. was charged on loans guaranteed by bills; 9 per cent. on mortgage loans up to 300,000 dinars in amount and 10 per cent.

(1) The difference between the loans authorised and the loans paid results from the fact that members of co-operative societies often ask for sums to meet all contingencies, but do not always utilise them in full.

above this amount; 7 per cent., since 1 April 1931, on loans to co-operative societies and 9 per cent., since 26 September of the same year, on loans guaranteed by the deposit of securities.

The general fall in prices, which particularly affected live stock and made the sale of wine impossible, the difficulty in recovering the proceeds of the sale of wheat, various calamities due to the weather, floods and untimely rains in certain regions, and epidemics among the live stock, have compelled the Bank to modify, as the crisis developed, the principles on which the payment of the annuity charges and of sums falling due was regulated, each case being specially considered and a complete or partial postponement of the payments being authorised. Postponements have been granted principally for the following reasons:

- (1) calamities which have destroyed more than 50 per cent. of the agricultural production, such as drought, hail, floods, fires and earthquakes;
- (2) illness and death in the borrower's family, particularly of the head of the family;
- (3) epidemic diseases of live stock and closing of the live stock markets;
- (4) parasites of plum trees and other diseases of fruit trees in the regions where there are many orchards;
- (5) want of access to roads and impossibility of transport;
- (6) impossibility of collecting the proceeds of sales of produce sold on deferred payment;
- (7) impossibility of marketing agricultural products, disproportionate fall in price, especially in the case of holdings which have a special or restricted production;
- (8) cases in which it is necessary to prevent sale at very low prices, particularly of cattle and store pigs;
- (9) cases in which it is necessary to prevent the sale of draught animals, especially those of small landholders;
- (10) to prevent the forced sale of wine at an unfavourable period in the regions where vine-growing is the principal agricultural production.

From this enumeration it is clear that the Bank is particularly anxious to avoid the consequences of the sale of produce on unfavourable conditions and, generally, the impoverishment of the farmers.

In all justified cases, the Bank also authorises the prolongation of the period within which a long-term loan must be repaid when the period of the loan, at the request of the debtor, had been made shorter than that contemplated by the regulations; this is done with a view to diminishing the amount of the annuity charges and facilitating their payment.

By the Law of 19 April 1932 (1) and by other measures, provision has been made also in Yugoslavia for the protection of the farmers and for the conversion of debts.

G. COSTANZO.

(1) Textes législatifs, published by the International Institute of Agriculture, 1932 Series, No. 16.

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(2) List of abbreviations: bihebd. (biweekly); bimens. (twice monthly); bimestr. (every two months); étr. (foreign price); hebdl. (weekly); int. (home price); irr. (irregular); mens. (monthly); N. S. (new series); q. (daily); sem. (half yearly); s. (series); v. (volume); trim. (quarterly).

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# AGRICULTURAL STATISTICS



# MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

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*The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.*

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## CEREALS

The information on this season's crop results received by the Institute since the appearance of the December number of the Crop Report involves only insignificant changes in the world production totals established a month ago.

For wheat the first estimate of production in Denmark, which has lately arrived, is as large as expected; the revision of the figure for the Canadian crop involves a very slight decrease (3 million bushels) on the preceding estimate, a very large crop is expected in New Zealand, where wheat production, though of secondary importance, seems more than sufficient for the internal needs of the country, which in any case is only a small importer, its imports amounting to only 1 million bushels annually in the form of flour. For the Union of South Africa even a preliminary estimate is lacking; a crop appreciably smaller than that of last year, which was exceptionally large and which has left fairly large stocks, is expected.

For the two great producing countries of the southern hemisphere the preliminary estimates already published have so far undergone no change and available information indicates that no important modifications are to be expected when revision takes place. The first forecast of Argentina is in fact considered in commercial circles as approaching closely to the facts; last year's forecast was similarly received and in fact the final result of last season's crop, kept very close to the preliminary estimates, the difference having been negligible. As regards Australia the October estimate has been confirmed by two telegrams from the Government in December and January; while it is true that last year, though a double confirmation of the first estimate was given on the same dates, the final figures were 20 million bushels higher, it should be observed that last year the information on the crop remained quite satisfactory for the duration of the harvest while, according to the telegram received in January this year, the first threshing results were in some districts somewhat below expectations. It thus does not seem probable, even if the Australian crop is rather above the total at present forecast, that the difference will be large.

The estimate of the world crop thus remains practically the same as calculated last month and though for several countries the estimates are still preliminary it is improbable that the final figures will involve any substantial changes in the total. For last year's crop the margin between the estimate of January 1932 (3,638 million bushels) and the definitive figure now established (3,674 million bushels) was 36 million bushels, 1 % of the total, the increase being largely due to an underestimate of Canadian and Australian production. For this year's crop it seems probable that the margin will be smaller than for that of last year. On the basis of the latest estimates, world production of wheat appears to be as follows :

*World wheat production (1).*

	(Million bushels)						
	1932	1931	1930	1929	1928	1927	1926
Europe . . . . .	1,486	1,433	1,363	1,453	1,411	1,275	1,216
North America . . .	1,165	1,238	1,290	1,128	1,492	1,371	1,249
South America . . .	276	268	272	220	400	338	272
Asia (1) . . . . .	393	408	458	382	342	393	382
Africa . . . . .	132	132	118	135	118	118	110
Oceania . . . . .	210	195	220	136	169	128	169
<i>Totals</i> . . . . .	3,662	3,674	3,721	3,454	3,932	3,623	3,398
U. S. S. R. . . . .	..	..	988	698	808	797	915

(1) *Excluding China, Persia, Turkey and Iraq.*

The totals of wheat production in the various continents show therefore only a slight reduction in the case of North America (Canada) and a corresponding augmentation for Oceania (New Zealand)

It does not seem likely, at least on the basis of the facts at present known, that there will be changes of any importance in the supply and demand situation in the present season as outlined in previous numbers of the Crop Report and summarized in the following table :

*World Wheat Position.*

	World exportable surpluses	World requirements	End of season exportable stocks
	(Million bushels)		
1932-33 (forecast) . . . . .	1,260	630	630
1931-32 . . . . .	1,370	800	570
1930-31 . . . . .	1,378	823	555
1929-30 . . . . .	1,101	627	474
1928-29 . . . . .	1,419	927	492
1927-28 . . . . .	1,122	810	312
1926-27 . . . . .	1,066	820	246



In fact as regards export surpluses the revisions of the production estimates in the various exporting countries have been of such small importance that they have no effect on the calculation of the exportable surpluses.

As regards import requirements it would appear that the forecast of a world total of 630 million bushels made last October needs no modification, the figures of total exports from all the exporting countries in the first four months of the season demonstrating, as will be seen from the following table, that world demand has been maintained strictly within the limits of our forecast, the 206 million bushels exported in the period 1 August-30 November representing exactly one-third of the total of 630 million indicated for the whole season.

*World wheat net exports (including flour in terms of wheat).*

	(Million bushels)			
	1932-33	1931-32	1930-31	1929-30
August . . . . .	41	66	77	71
September . . . . .	50	78	74	57
October . . . . .	62	74	84	60
November . . . . .	53	67	77	51
December . . . . .	...	64	59	50
January . . . . .	...	62	54	48
February . . . . .	...	73	69	45
March . . . . .	...	75	67	50
April . . . . .	...	70	62	42
May . . . . .	...	67	81	49
June . . . . .	...	59	67	51
July . . . . .	...	45	52	53
<hr/>				
Total Season . . . (*)	630	800	823	627
Total August-October . . . .	206	285	312	239
Percentage . . . . .	33 %	36 %	38 %	38 %

(\*) Forecast.

It is interesting to compare the situation this season with that in 1929-30, when world exports were exactly the same as those forecast for the present season. In 1929 the production of the European importing countries was 1,145 million bushels and the net imports of these countries in 1929-30 were 510 millions, apparent consumption being therefore 1,655 million bushels. For the current season production of the same countries has been placed at 1,264 million bushels and probable imports at 440 millions, giving an apparent consumption of 1,704 millions, which is considerably above that of 1929-30, by 50 million bushels, in fact.

Even assuming that in 1929-30 internal stocks were drawn upon and that real consumption consequently exceeded apparent consumption by some million bushels, it could not have attained the 1,704 million bushels given by us for the present season. It would seem, therefore, that, taking also into account that

the numerous obstacles and regulations characteristic of the present period were not in force in 1929-30, the import requirements of Europe for the current season have been estimated with a sufficiently ample margin, even including a fairly large allocation toward the reconstitution of internal stocks in some countries. If the recent calculations of the Food Research Institute are exact such a reconstitution does not in any case involve very large quantities, the internal stocks of the European importing countries at the beginning of this season having been estimated by that authority to have been reduced by about 40 million bushels from the mean of the preceding five years.

On the whole it may be estimated that if exports to Europe greatly exceed the amount forecast the difference will mean no lightening of the supply situation but merely a displacement of stocks from the exporting countries to the European importing countries.

It remains to examine what possibilities of wider markets are offered by the extra-European countries and more particularly by those of the Far East, where a strong revival of demand has been experienced in recent weeks. If the general economic situation were healthy and normal the present low prices would in all probability stimulate larger consumption in these countries and the quantities absorbed by them would greatly lighten the present heavy supplies, unfortunately, however, such a change in the situation is highly improbable in the coming months. The data of weekly shipments to extra-European countries up to mid-January show, in fact, that there has been a diminution of about 20 % on the corresponding data of last year while our forecast of a total import of 190 million bushels for the whole season assumed a diminution of only 14 million or less than 10 % on the total of the preceding season

As regards the condition of winter crops, sowings have everywhere been completed save in certain areas in North Africa, where they will continue until the beginning of February. For the majority of European countries estimates of area cultivated are not yet available. Those communicated to the Institute confirm the impression that wheat sowings will be at least the same and in several cases appreciably larger than those of last year in countries where the level of prices is much higher than that on the world market. Amongst these countries are Germany, Czechoslovakia, Latvia, Greece and Great Britain and there is no doubt that the same tendency will be seen in France and Italy when the data of areas sown become known next month 1).

It is also probable that Rumania and Yugoslavia will eventually sow almost the same areas as last year, consequent on the low crop of last season, while in Bulgaria and Hungary a certain reduction is expected.

1) As the «Crop Report» was going to press the estimate of area sown to winter wheat in France arrived, the figure being 12,864,000 acres, almost the same as that of last year (12,894,000 acres), the percentage being 99.8.

In the U. S. S. R. autumn sowings were pursued with difficulty and the area sown has not reached either that foreseen by the Government or that of last year, to which it remains inferior by 4 million acres.

In the United States the reduction of sowings has been only 500,000 acres but the losses in area due to winter damage are now, following on the long autumn drought and the insufficiency of snow-cover during the coldest weeks, reported to be much greater than usual.

In India the area cultivated to wheat in the Punjab, the principal area of production, is 15 % below that of 1932.

Sowings in North Africa were hindered by drought and at the beginning of the year had not been completed by some of the natives in the western area.

*Area sown to winter cereals.*

(Thousand acres)

COUNTRIES	WHEAT			RYE			BARLEY			OATS		
	% 1932/33			% 1932/33			% 1932/33			% 1932/33		
	1932/33	1931/1932	1926/1927 to 1930/1931 = 100	1932/33	1931/1932	1926/1927 to 1930/1931 = 100	1932/33	1931/1932	1926/1927 to 1930/1931 = 100	1932/33	1931/1932	1926/1927 to 1930/1931 = 100
Germany . . .	4,947	101.3	123.2	10,991	101.5	97.7	618	101.7	129.6	—	—	—
Bulgaria . . .	2,911	95.2	104.2	493	96.4	96.0	457	99.0	97.6	—	—	—
Finland . . .	34	106.0	127.2	560	103.0	104.1	—	—	—	—	—	—
Greece . . .	1,667	111.4	124.6	188	104.1	132.1 1)	611	106.5	126.9 1)	388	105.7	132.4
Latvia . . .	182	105.0	151.5	652	110.0	—	—	—	—	—	—	—
Lithuania . . .	389	92.6	125.6	1,182	99.7	101.3	—	—	—	—	—	—
Czechoslovakia . . .	2,151	107.7	115.3	2,476	98.1	99.9	15	98.5	99.8	—	—	—
U. S. S. R. . .	28,058	86.8	126.9	63,007	97.8	98.0	711	81.6	70.5	—	—	—
Canada . . .	556	97.9	62.2	496	74.7	67.7	—	—	—	—	—	—
United States . .	39,902	98.7	90.2	4,649	93.0	114.9	—	—	—	—	—	—
British India: Punjab . . .	9,172	85.3	87.4	—	—	—	—	—	—	—	—	—
Egypt . . .	1,467	83.3	91.4	—	—	—	287	78.4	80.0	—	—	—

1) Winter and spring crops.

It may at present be concluded that, while in Europe, a small increase in cultivated area is expected, a fairly considerable diminution in winter wheat crops may be expected in all the other continents. As regards crop condition the mild wet winter in Europe has favoured development, which in some countries is even excessive; condition at the beginning of the year was average in the U. S. S. R., bad in the United States, with no improvement in the first weeks of January, and fairly good in India and North Africa following on the rains in mid-January.

G. CAPONE.

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*Germany* : The *Statistisches Reichsamt* has just published an estimate of areas sown to winter cereals. The figures are of course provisional and will no doubt be subject to modification, according to the weather conditions during the winter when the spring estimate is made. For the estimates of wheat, rye and oats production see the general table. The area under winter spelt is rather larger than last year, being 289,000 acres.

The final data of area and production of spelt and of meslin for recent years are as follows :

	1932	1931	Average 1926-30	% 1931 = 100	% 1932 Average = 100
<i>Area (Thousand acres)</i>					
Spelt . . . . .	283	282	306	100.5	92.6
Meslin . . . . .	905	894	(1) 893	101.3	101.4
<i>Production.</i>					
Spelt (000 centals) . . . . .	3,414	2,941	3,200	116.1	106.7
Meslin (000 centals) . . . . .	14,393	13,236	(1) 13,508	108.7	106.6
(000 bushels) . . . . .	24,816	22,821	(1) 23,291		

(1) 1927-30.

*Austria* : In the first decade of December sporadic rains occurred but were heavy only in Carinthia. Toward the middle of December temperatures were exceptionally high in the mountainous areas. Snow lay only on shady slopes.

Winter sowings were able to develop only up to the middle of December. In the majority of cases they developed well. Frosts have not caused any appreciable damage.

At the beginning of January condition of sowings was as follows: winter wheat 2.4 (against 2.2 on 1 December 1932 and 2.4 on 1 January 1932); winter rye 2.1 (2.2, 2.4) and winter barley 2.4 (2.1, 2.3).

*Belgium* : At the beginning of December the weather was cold, cloudy and rainy; in the latter half of the month the days were sunny and the nights mild. Sowings of wheat were terminated in good conditions and in general have a good appearance.

*Bulgaria* : Weather this winter has been favourable to autumn sowings, which were carried out in good conditions. Germination of winter cereals, of which the areas show a slight decrease on those of preceding years, was regular. According to a preliminary estimate the area sown to winter meslin shows a fresh decrease, falling from 222,000 acres in 1931-32 and 242,000 on the average of the five years ending 1930-31 to 202,000 in 1932-33.

*Denmark* : Production of meslin in 1932 was 17.4 million centals (30.0 million bushels) against 16.3 (28.1) in 1931 and the 1926-30 average of 14.7 (25.3); percentages 106.8 and 118.7.

*Irish Free State* : Weather and soil conditions in the first half of December favoured sowing and the obtaining of a good seedbed. Germination of the crops already sown was generally uniform and brairding was even. There was comparatively little frost and no resowings were necessary.

*Finland* : Winter wheat was sown under average conditions and winter rye in part under bad conditions. Germination was regular.

*France* : Though temporarily interrupted by the frosts at mid-December, field work and sowing continued under very favourable conditions and had been practically finished everywhere by the end of the month ; thanks to the particularly favourable weather, the soil was in good condition and the area sown is reported to be probably equal to the already rather large one of last year.

The mild, damp weather which prevailed, almost without interruption, from the beginning of November and still continued on about 10 January has encouraged a very vigorous growth of the sowings, which, in some cases, were subsequently exposed to a greater risk of damage due to late frosts and to spreading of weeds. Drier and colder weather was urgently required in all regions. The winter wheat situation remained, however, satisfactory everywhere though less good in the Southeast due to excessive moisture; in the East, on the contrary, crop condition was excellent.

Production of late-season cereals, millet and buck wheat, not published in the general table, is as follows (thousand centals):

	1932	1931	Average 1926 to 1930	% 1932 1931 = 100	Average = 100
Millet . . . . .	227.9	263.8	199.4	86.4	114.3
Buckwheat . . . .	8,597.7	8,142.8	8,752.3	105.6	98.2

*Great Britain and Northern Ireland* : December was mild with moderate rains in England and Wales and heavy rains in Scotland and Northern Ireland. Autumn-sown crops in England and Wales progressed very well. In England and Wales cultivation was possible throughout the month save on heavy land and in some lowlying areas; in Scotland most of the work was carried out during short spells of fine weather while in Northern Ireland fair progress was made on dry land.

For the most part wheat germinated satisfactorily in England and Wales and was a good even plant; in Scotland early-sown fields had an exceptionally good appearance. Barley and oats were reported to have made good progress in England and Wales and to be healthy and vigorous. At the end of December it was estimated that the area sown to wheat in England and Wales was about 17 % greater than at the end of 1931 but that there was some decrease in the area under barley and oats.

In Northern Ireland threshing of oats made considerable progress and that of barley was practically finished; a large proportion of the oats is being retained for home consumption.

*Hungary* : In the period of five weeks from 10 December to 14 January weather was generally unfavorable to autumn sowings. The snow-cover varied greatly in thickness. In several places melting has occurred.

The prolonged very favourable autumn weather has had an exceptionally good effect on the sowings. Autumn crops entered the winter in a very vigorous condition. At the end of the period under consideration the greater part were still almost or entirely without snow-cover. Nevertheless the frosts reported up to 14 January caused no damage.

## Cereals.

COUNTRIES	†) AREA					†) PRODUCTION							
	1932	1931	Average	%	1932	1932	1931	Average	1932	1931	Average	%	1932
	1932/33	1931/32	1926/27	1932/33	1931/32	1932/33	1931/32	1926/27	1932/33	1931/32	1926/27	1931/32	1932/33
	1,000 acres					1,000 cents			1,000 bushels				

## WHEAT.

Germany . . . . .	5,634	5,356	4,181	105.2	134.8	110,300	93,329	74,380	183,829	155,545	123,964	118.2	148.3
Austria . . . . .	536	517	508	103.7	105.5	7,804	6,605	6,946	13,007	11,009	11,576	118.2	112.4
Belgium . . . . .	391	381	384	102.4	101.7	9,060	8,291	8,731	15,099	13,817	14,551	109.3	103.5
Bulgaria . . . . .	3,078	3,053	2,754	100.8	111.7	30,332	38,299	26,200	50,553	63,830	43,666	79.2	115.8
Denmark . . . . .	245	259	257	94.7	95.4	6,393	6,032	6,785	10,655	10,053	10,475	106.0	101.7
Spain . . . . .	11,189	11,245	10,786	99.5	104.7	107,102	80,657	85,802	134,426	143,001	132,8	132.8	124.8
Estonia . . . . .	128	99	74	129.0	173.3	1,245	1,043	707	2,075	1,738	1,178	119.4	176.1
Finland . . . . .	50	47	40	106.8	126.6	756	696	554	1,260	1,161	923	108.6	136.5
France . . . . .	13,235	12,840	13,052	103.1	101.4	198,818	158,473	162,547	331,357	264,116	270,906	125.5	122.5
Engl. and Wales . . . . .	1,288	1,197	1,460	107.6	88.2	24,752	21,532	28,378	41,253	35,887	47,296	115.0	87.1
Scotland . . . . .	52	50	57	104.1	91.9	1,344	1,075	1,335	2,240	1,792	2,225	125.0	100.7
N. Ireland . . . . .	3	3	5	107.8	65.0	73	64	112	121	106	187	114.1	64.4
Greece . . . . .	1,496	1,496	1,300	100.0	115.1	11,685	6,737	7,157	19,474	11,228	11,920	173.4	163.3
Hungary . . . . .	3,897	4,011	3,953	97.2	98.6	35,156	42,531	49,246	58,593	72,550	82,075	80.8	71.4
Italy 1) . . . . .	12,237	11,884	12,083	103.0	101.3	165,679	146,372	133,831	276,127	244,782	223,048	112.8	123.8
Latvia . . . . .	255	215	151	118.8	168.7	3,175	2,133	1,607	5,292	3,388	2,679	156.2	197.4
Lithuania . . . . .	514	478	401	107.4	128.1	5,615	5,004	4,372	9,359	8,340	7,287	112.2	128.4
Luxembourg . . . . .	22	23	30	97.8	73.9	298	244	331	496	407	551	122.0	90.0
Malta . . . . .	10	10	9	99.2	103.9	181	166	179	301	277	298	108.6	101.0
Norway . . . . .	28	29	27	97.0	103.1	471	355	415	785	592	692	132.7	113.4
Netherlands . . . . .	293	192	137	152.2	212.9	8,217	4,051	3,660	13,694	6,751	6,100	202.9	224.5
Poland . . . . .	4,266	4,495	3,477	94.9	122.7	33,534	49,933	38,519	55,888	83,220	64,197	67.2	87.1
Portugal . . . . .	1,271	1,082	1,082	100.0	93.0	10,883	7,799	6,202	18,138	12,999	10,437	139.5	173.8
Rumania . . . . .	7,091	8,566	7,625	82.8	93.0	35,797	81,181	66,443	59,600	135,299	110,736	44.1	53.9
Sweden . . . . .	747	683	544	109.4	137.2	15,499	10,529	10,270	25,830	18,048	17,125	143.1	50.8
Switzerland 2) . . . . .	182	179	175	101.5	103.8	3,389	3,294	3,372	5,647	5,489	5,619	102.9	100.5
Czechoslovakia . . . . .	2,064	2,047	1,899	100.9	108.7	32,242	24,739	24,058	53,736	41,232	48,428	130.3	111.0
Yugoslavia . . . . .	4,820	5,289	4,768	91.1	101.1	32,067	59,274	48,794	53,444	98,789	81,322	54.1	61.7
Total Europe . . . . .	75,022	75,915	71,219	98.8	105.3	891,867	862,138	805,494	1,486,412	1,436,871	1,342,462	103.4	110.7
*U. S. S. R. . . . .	85,940	92,074	74,445	93.3	115.4	...	...	504,153	...	...	840,238	...	...
Canada . . . . .	27,182	26,115	25,926	104.1	113.6	257,108	192,795	261,452	428,514	321,325	435,744	133.4	98.5
United States (w) . . . . .	33,656	41,357	38,193	81.4	88.1	277,291	472,436	352,255	462,151	787,493	587,091	53.7	78.7
Mexico . . . . .	21,521	13,987	21,252	153.9	101.3	158,808	67,090	163,101	264,680	112,826	271,835	234.6	97.1
Total North Amer. . . . .	1,066	1,501	1,278	71.1	83.4	5,335	9,736	6,724	8,921	16,226	11,707	55.0	79.1
Korea . . . . .	83,425	82,960	84,649	100.6	98.6	698,560	742,663	783,532	1,164,265	1,237,770	1,305,877	94.1	84.5
India . . . . .	...	817	882	...	...	4,983	5,904	5,422	8,305	8,340	9,037	99.6	91.9
Japan . . . . .	33,749	32,189	31,485	104.8	107.2	202,182	206,432	199,203	336,971	347,387	332,005	97.0	101.5
Syria and Lebanon . . . . .	1,247	1,228	1,185	101.5	105.2	18,802	18,535	17,819	31,330	30,892	29,699	101.4	105.1
Total Asia . . . . .	1,087	1,167	1,118	93.1	97.2	5,895	8,252	8,383	9,825	11,753	13,971	71.4	70.7
Algeria . . . . .	36,900	35,401	34,670	104.2	106.4	231,862	240,224	230,827	386,437	400,372	384,712	96.5	100.0
Egypt . . . . .	3,703	3,640	3,738	101.7	99.1	19,511	15,390	17,755	32,518	25,649	29,592	126.8	109.0
Eritrea . . . . .	1,762	1,649	1,583	106.8	111.3	31,552	27,644	24,460	52,586	46,072	40,766	114.1	129.0
*Kenya 3) . . . . .	15	22	23	66.7	65.8	88	18	44	145	29	73	...	...
French Morocco . . . . .	40	43	67	93.4	59.9	...	174	404	...	290	674	...	...
Tunis . . . . .	2,450	2,537	2,699	96.6	90.8	13,179	17,870	16,553	21,965	29,783	27,588	73.7	79.6
Total Africa . . . . .	2,100	1,977	1,774	106.2	118.4	8,819	8,378	6,905	14,697	13,662	11,508	105.3	127.7
Argentina . . . . .	10,030	9,825	9,817	102.1	102.2	73,149	69,300	65,717	121,911	115,495	109,527	105.6	111.3
*Chile . . . . .	19,791	17,295	20,901	114.4	94.7	138,892	131,821	150,756	231,482	219,697	251,255	105.4	92.1
*Uruguay . . . . .	1,570	1,517	1,635	103.5	96.1	...	12,712	16,597	...	21,187	27,661	...	...
Australia . . . . .	843	1,080	1,056	78.1	79.8	...	6,748	7,016	...	11,246	11,693	...	...
New Zealand . . . . .	15,585	14,500	14,387	107.5	108.3	120,000	113,792	93,450	200,000	189,653	155,748	105.5	128.4
GRAND TOTALS . . . . .	294	281	246	104.8	119.3	...	...	...	...	...	...	...	...
	240,753	235,896	235,643	102.1	102.2	2,154,330	2,159,938	2,129,776	3,590,508	3,599,858	3,549,581	99.7	101.2

## RYE.

Germany . . . . .	10,996	10,788	11,616	101.9	94.7	184,386	147,769	165,770	329,262	262,982	296,018	125.2	111.2
Austria . . . . .	944	934	942	101.1	100.3	13,358	10,601	11,143	23,853	18,931	19,898	126.0	119.0
Belgium . . . . .	573	553	569	103.6	100.7	11,244	11,470	11,862	20,078	20,483	21,182	98.0	94.8
Bulgaria . . . . .	544	600	521	90.6	104.4	5,676	5,966	4,716	10,136	10,653	8,422	95.1	120.3
Denmark . . . . .	296	332	415	89.2	71.3	4,850	4,707	5,932	8,661	8,406	10,593	103.0	81.1

COUNTRIES	t) AREA					t) PRODUCTION							
	1932	1931	Average	%	1932	1932	1931	Average	1932	1931	Average	%	1932
	1932/33	1931/32	1926/27	1932/33	1932/33	1931/32	1926/27	1932/33	1932/33	1931/32	1926/27	1931/32	1932/33
			to 1930				to 1930				to 1930		
			to 1930/31				to 1930/31				to 1930/31		
	1,000 acres					1,000 centals			1,000 bushels				
Spain . . . . .	1,517	1,516	1,658	100.1	91.5	13,317	11,817	12,420	23,780	21,103	22,179	112.7	107.2
Estonia . . . . .	364	356	351	102.2	103.5	3,700	3,259	3,515	6,606	5,820	6,277	113.5	105.3
Finland . . . . .	544	554	540	98.2	100.7	7,639	6,604	6,663	13,641	11,792	11,898	115.7	114.7
France . . . . .	1,755	1,760	1,899	99.7	92.4	19,705	16,530	18,253	35,188	29,519	32,594	119.2	108.0
Greece . . . . .	180	172	131	105.1	137.6	777	1,008	898	1,378	1,800	1,603	76.6	85.9
Hungary . . . . .	1,574	1,486	1,631	105.9	96.5	18,035	12,136	16,374	32,206	21,672	29,240	148.6	110.1
Italy 1) . . . . .	294	304	305	96.6	96.2	3,584	3,652	3,584	6,400	6,521	6,401	98.1	100.0
Latvia . . . . .	593	572	628	103.7	94.5	6,604	3,144	5,448	11,793	5,615	9,729	210.0	121.2
Lithuania . . . . .	1,195	1,257	1,164	95.0	102.7	11,653	9,118	11,307	20,808	16,282	20,192	127.8	103.1
Luxembourg . . . . .	17	16	18	108.1	97.1	231	188	219	413	336	391	123.1	105.7
Norway . . . . .	16	15	20	107.0	79.8	295	212	318	527	378	569	139.4	92.7
Netherlands . . . . .	407	445	485	91.6	84.1	7,650	7,933	8,698	13,660	14,167	15,532	96.4	88.0
Poland . . . . .	13,951	14,263	14,078	97.8	99.1	141,343	125,722	137,337	252,399	224,504	245,246	112.4	102.9
Portugal . . . . .	427	407	407	100.0	100.0	3,590	2,839	2,446	6,411	5,070	4,369	126.4	146.7
Rumania . . . . .	861	1,006	779	85.6	110.4	5,887	7,819	7,123	10,512	13,962	12,721	75.3	82.6
Sweden . . . . .	514	511	686	100.5	74.9	9,722	6,577	9,925	17,362	11,745	17,723	147.8	98.0
Switzerland . . . . .	45	46	49	99.5	92.3	833	785	894	1,488	1,402	1,597	106.2	93.2
Czechoslovakia . . . . .	2,569	2,470	2,584	104.0	99.4	47,970	30,597	36,765	85,661	54,631	65,651	156.8	130.5
Yugoslavia . . . . .	600	603	542	99.5	110.8	4,664	4,264	4,144	8,328	7,614	7,399	109.4	112.5
Total Europe . . . . .	40,776	40,986	42,018	99.5	97.1	526,708	434,213	485,754	940,551	775,388	867,424	121.3	108.4
U. S. S. R. . . . .	65,731	68,380	65,082	96.1	100.4	...	...	492,031	...	...	878,629	...	...
Canada . . . . .	774	778	955	99.5	81.0	5,005	2,980	8,685	8,938	5,322	15,509	167.9	57.6
United States . . . . .	3,271	3,060	3,312	106.9	98.8	22,319	17,935	22,704	39,855	32,026	40,542	124.4	98.3
Total North Amer . . . . .	4,045	3,838	4,267	105.4	94.8	27,334	20,915	31,377	48,793	37,348	56,051	130.6	87.0
Algeria . . . . .	4	3	4	119.9	109.6	20	20	28	35	37	49	96.9	71.8
French Morocco . . . . .	2	2	2	94.5	105.3	...	8	11	...	14	19	...	...
Argentina . . . . .	1,624	1,378	1,065	117.8	152.4	6,614	5,456	3,534	11,811	9,744	6,311	121.2	187.1
Chile . . . . .	7	7	8	104.3	92.1	...	46	71	...	82	127	...	...
GRAND TOTALS . . . . .	46,449	46,205	47,354	100.6	98.1	560,666	460,604	520,693	1,001,190	822,517	929,815	121.7	107.7
BARLEY.													
Germany . . . . .	3,875	4,001	3,733	96.8	103.8	70,872	66,540	64,324	147,653	138,627	134,011	106.5	110.2
Austria . . . . .	438	416	387	103.9	101.6	9,654	4,773	5,531	13,862	9,948	11,523	139.3	120.3
Belgium . . . . .	89	70	78	126.9	114.2	2,068	1,705	1,862	4,308	3,552	3,879	121.3	111.1
Bulgaria . . . . .	568	605	591	93.9	96.3	6,769	7,613	6,507	14,102	15,851	13,765	88.9	90.5
Denmark . . . . .	851	889	863	95.8	98.6	21,826	21,107	21,063	45,171	43,974	43,882	103.4	103.6
Estonia . . . . .	4,837	4,644	4,481	104.2	107.9	61,087	43,548	45,265	127,267	90,727	94,304	140.3	135.0
France . . . . .	266	279	283	95.4	94.9	1,991	2,840	2,512	4,147	5,918	5,233	70.1	79.3
Finland . . . . .	103	116	125	89.0	82.4	...	2,362	2,939	...	4,921	6,122	...	...
Poland . . . . .	300	276	276	109.1	108.8	3,847	3,086	3,220	8,015	6,430	6,708	124.6	119.5
France . . . . .	1,859	1,865	1,721	99.7	108.0	25,766	22,911	23,404	53,680	47,732	49,801	112.5	107.8
England and Wales . . . . .	963	1,029	1,104	93.6	87.2	17,181	17,294	20,300	35,793	36,029	42,293	99.3	84.6
Scotland . . . . .	69	88	112	78.4	61.6	1,478	1,658	2,249	3,080	3,453	4,685	89.2	65.7
N. Ireland . . . . .	1	1	2	74.4	59.0	26	30	40	53	63	83	85.0	64.5
Greece . . . . .	574	550	472	104.2	121.4	5,512	3,430	3,333	11,483	7,146	6,945	160.7	165.3
Hungary . . . . .	1,165	1,165	1,077	100.0	108.2	15,599	10,496	13,327	32,498	21,867	27,765	148.6	117.0
Italy 1) . . . . .	530	538	579	98.6	91.6	5,538	5,310	5,257	11,537	11,062	10,953	104.3	103.0
Latvia . . . . .	457	451	436	101.4	104.8	4,247	4,228	3,462	8,849	8,809	7,213	100.5	122.7
Lithuania . . . . .	495	474	499	104.4	99.2	4,883	5,205	4,796	10,173	10,845	9,992	93.8	107.7
Luxembourg . . . . .	10	11	9	89.9	114.1	132	128	115	276	266	240	103.6	115.0
Malta 5) . . . . .	6	7	7	90.3	94.0	129	137	141	269	285	294	94.4	91.8
Norway . . . . .	137	138	142	98.9	96.6	2,677	2,019	2,341	5,578	4,207	4,877	132.6	114.4
Netherlands . . . . .	50	71	71	70.3	70.0	1,301	1,572	1,960	2,710	3,274	4,084	82.8	66.4
Poland . . . . .	2,982	3,144	2,905	94.8	102.6	33,891	32,534	31,486	70,507	67,781	65,598	104.2	107.6
Portugal . . . . .	175	170	175	100.0	100.0	1,151	972	885	2,398	2,025	1,845	118.4	130.0
Rumania . . . . .	4,416	4,742	4,494	93.1	98.2	32,389	31,182	42,194	67,479	64,964	87,906	103.9	76.8
Sweden . . . . .	292	311	333	94.0	87.7	4,850	5,143	5,394	10,105	10,716	11,237	94.3	89.9
Switzerland . . . . .	17	18	16	98.6	107.7	287	271	263	597	565	549	105.7	108.9
Czechoslovakia . . . . .	1,759	1,775	1,753	99.1	100.3	33,177	23,691	28,347	69,121	49,357	59,057	140.0	117.0
Yugoslavia . . . . .	1,006	1,065	986	94.5	102.0	8,631	8,640	8,383	17,982	18,000	17,464	99.9	103.0
Total Europe . . . . .	28,172	28,793	27,585	97.8	102.1	373,959	328,065	348,561	779,093	683,483	726,186	114.0	107.3
U. S. S. R. . . . .	16,329	16,854	18,169	96.9	89.9	...	...	130,089	...	...	271,024	...	...
Canada . . . . .	3,758	3,768	4,704	99.7	79.9	38,771	32,344	54,795	80,773	67,383	114,158	119.9	70.8
United States . . . . .	13,213	11,419	11,232	115.7	117.6	143,976	95,227	126,705	299,950	198,389	263,969	151.2	113.6
Total North Amer . . . . .	16,971	15,187	15,936	111.7	106.5	182,747	127,571	181,500	380,723	265,772	378,127	143.3	100.7

\* St. 1 Incl.

COUNTRIES	1) AREA					1) PRODUCTION							
	1932 — 1932/33	1931 — 1931/32	Average 1926 to 1930 — 1926/27 to 1930/31	% 1932 1932/33		1932 — 1932/33	1931 — 1931/32	Average 1926 to 1930 — 1926/27 to 1930/31	1932 — 1932/33	1931 — 1931/32	Average 1926 to 1930 — 1926/27 to 1930/31	% 1932 1932/33	
				1931 — 1931/32	Aver. — 1932/33							1931 — 1931/32	Aver. — 1932/33
1,000 acres			= 100	1,000 centals			1,000 bushels			= 100	= 100		
Korea . . . . .	—	2,410	2,252	—	—	21,161	20,093	17,617	44,086	41,862	36,702	105.3	120.1
Japan . . . . .	2,107	2,097	2,265	100.5	93.0	37,316	36,730	38,870	77,744	76,522	80,980	101.6	96.0
Syria and Lebanon . . . . .	766	818	746	93.7	102.7	4,398	6,812	8,299	9,163	14,193	17,291	64.6	53.0
Total Asia . . . . .	5,283	5,325	5,263	99.2	100.4	62,875	63,635	64,786	130,993	132,577	134,973	98.8	97.0
Algeria . . . . .	3,279	3,178	3,505	103.2	93.6	14,330	12,993	16,886	29,855	27,069	35,181	110.3	84.9
Egypt . . . . .	366	306	364	119.6	100.4	5,792	4,653	5,379	12,067	9,694	11,206	124.5	107.7
Eritrea . . . . .	99	62	54	160.0	183.5	617	445	144	1,286	928	299	138.6	429.4
French Morocco . . . . .	2,930	3,222	2,995	90.9	97.8	17,882	28,335	21,933	37,254	59,032	45,695	63.1	81.5
Tunis . . . . .	1,483	1,223	1,235	121.2	120.1	7,496	3,968	4,063	15,616	8,268	8,465	188.9	184.5
Total Africa . . . . .	8,157	7,991	8,153	102.1	100.1	46,117	50,394	48,405	96,078	104,991	100,846	91.5	95.3
Argentina . . . . .	4) 1,520	4) 1,439	4) 1,276	105.6	119.1	15,432	10,620	7,668	32,151	22,125	15,976	145.3	201.3
*Chile . . . . .	111	106	167	104.8	66.7	...	1,487	2,390	...	3,097	4,980	...	...
*Uruguay . . . . .	10	10	9	106.2	117.0	...	71	66	...	148	138	...	...
*New Zealand . . . . .	19	27	24	70.3	78.1	...	...	...	...	...	...	...	...
GRAND TOTALS . . . . .	§) 60,103	58,735	58,213	102.3	103.2	681,130	580,285	650,920	1,419,038	1,208,948	1,356,106	117.4	104.6

## OATS.

Germany . . . . .	8,118	8,310	8,634	97.7	94.0	146,612	136,795	144,210	458,160	427,482	450,653	107.2	101.7
Austria . . . . .	784	777	759	100.9	103.4	10,020	7,321	9,645	31,312	22,877	30,141	136.9	103.9
Belgium . . . . .	714	721	682	98.0	104.7	15,293	15,483	15,044	47,790	48,384	47,019	98.8	101.7
Bulgaria . . . . .	281	293	335	96.0	83.9	2,488	2,259	2,327	7,777	7,060	7,272	110.2	106.9
Denmark . . . . .	983	937	999	105.0	98.4	23,149	20,624	21,386	72,339	64,448	66,832	112.2	108.2
Spain . . . . .	1,926	1,986	1,902	97.0	101.3	17,165	13,335	13,333	53,639	41,670	41,664	128.7	128.7
Estonia . . . . .	356	367	356	97.2	100.0	2,790	3,615	2,807	8,719	11,296	8,772	72.7	99.4
*Irish Free State . . . . .	623	623	650	100.0	95.8	...	11,666	14,628	...	36,457	45,713	...	...
Finland . . . . .	1,119	1,149	1,100	97.4	101.8	14,573	14,684	12,952	45,539	45,886	40,475	99.2	112.5
France . . . . .	8,418	8,564	8,584	98.3	98.1	113,083	101,213	109,233	353,383	316,288	341,352	111.7	103.5
Engl. and Wales . . . . .	1,577	1,652	1,802	95.5	87.5	28,022	27,774	32,032	87,570	86,793	100,098	100.9	87.5
Scotland . . . . .	867	835	893	103.9	97.1	16,710	13,033	15,573	52,220	43,540	48,664	119.9	107.3
N. Ireland . . . . .	286	286	312	100.0	91.7	6,465	5,065	6,312	20,203	15,827	19,725	127.6	102.4
Greece . . . . .	367	344	279	106.7	131.4	1,984	1,688	1,595	6,200	5,274	4,985	117.6	124.4
Hungary . . . . .	575	596	665	96.5	86.4	6,243	4,278	7,753	19,510	13,368	24,227	146.0	80.5
Italy 1) . . . . .	1,113	1,146	1,255	97.1	88.6	13,378	12,629	13,112	41,805	39,467	40,974	105.9	102.0
Latvia . . . . .	802	795	735	100.9	109.1	7,121	7,555	5,646	22,252	23,611	17,644	94.2	126.1
Lithuania . . . . .	931	900	828	103.4	112.4	7,981	8,981	7,311	24,940	28,065	22,846	88.9	109.2
Luxembourg . . . . .	74	75	72	98.9	102.9	1,124	871	984	3,514	2,721	3,076	129.1	114.2
Norway . . . . .	235	237	241	99.1	97.4	4,250	3,038	4,124	13,282	9,494	12,889	139.9	103.1
Netherlands . . . . .	350	369	378	94.9	92.5	6,693	6,331	7,341	20,916	19,784	22,941	105.7	91.2
Poland . . . . .	5,486	5,367	5,125	102.2	107.0	52,468	50,915	52,374	163,963	159,109	163,668	103.1	100.2
Portugal . . . . .	—	422	443	—	—	2,354	2,026	1,835	7,355	6,331	5,735	116.2	128.2
Rumania . . . . .	1,956	2,154	2,757	90.8	71.0	14,169	14,776	24,354	44,276	46,175	76,107	95.9	58.2
Sweden . . . . .	1,577	1,590	1,729	99.1	91.2	24,802	22,326	25,867	77,506	69,767	80,835	111.1	95.9
Switzerland . . . . .	41	45	50	87.9	81.4	750	739	926	2,342	2,308	2,894	101.5	81.0
Czechoslovakia . . . . .	2,020	2,031	2,073	99.4	97.4	36,681	26,998	30,809	114,628	84,368	96,276	135.9	119.1
Yugoslavia . . . . .	810	936	937	86.5	86.4	5,935	5,837	7,283	18,548	18,242	22,759	101.7	81.5
Total Europe . . . . .	§) 42,188	42,892	43,925	98.4	96.1	582,303	531,089	576,168	1,819,688	1,659,635	1,800,517	109.6	101.1
*U. S. S. R. . . . .	35,149	42,492	43,286	82.7	81.2	...	...	342,579	...	...	1,070,551	...	...
Canada . . . . .	13,148	12,871	12,971	102.1	101.4	134,151	111,615	134,725	419,221	348,795	421,014	120.2	99.6
United States . . . . .	41,224	39,800	40,202	103.6	102.5	397,580	357,750	380,581	1,242,437	1,117,970	1,189,317	111.1	104.5
Total North Amer. . . . .	54,372	52,671	53,173	102.3	102.3	531,731	469,365	515,306	1,661,658	1,466,765	1,610,331	113.3	103.2
Syria and Leb. . . . .	28	27	42	103.2	66.6	299	228	287	934	711	897	131.3	104.1
Algeria . . . . .	504	557	605	90.5	83.4	2,271	2,628	4,169	7,096	8,212	13,028	86.4	54.5
French Morocco . . . . .	63	60	82	106.0	77.2	509	531	637	1,591	1,660	1,992	95.9	79.9
Tunis . . . . .	86	67	109	129.6	79.3	617	728	780	1,929	2,274	2,429	84.8	79.1
Total Africa . . . . .	653	684	796	95.7	82.3	3,397	3,887	5,586	10,616	12,146	17,449	87.4	60.2
Argentina . . . . .	4) 3,652	4) 3,470	4) 3,535	105.3	103.3	27,558	22,170	20,093	86,118	69,280	62,603	124.3	141.8
*Chile . . . . .	174	166	203	104.9	86.0	...	1,575	2,171	...	4,923	6,785	...	...
*Uruguay . . . . .	135	148	141	91.0	95.6	...	994	801	...	3,107	2,504	...	...
*New Zealand . . . . .	407	364	320	111.7	127.3	...	...	...	...	...	...	...	...
GRAND TOTALS . . . . .	§) 100,893	99,744	101,471	101.2	99.4	1,145,288	1,026,739	1,117,380	3,579,014	3,208,537	3,491,797	111.5	102.4

1) The two dates given refer to the years in which the harvest took place in the northern and southern hemispheres respectively. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production but not those of area are available. — \* Countries not included in the totals. — w) Autumn crops. — r) Spring crops. — r) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 2) Including spelt and meslin. — 3) European crops only. — 4) Area sown. — 5) Barley and meslin.



*Italy* : In December weather favoured sprouting of wheat, which was in many provinces well developed. The young crops showed almost everywhere excellent growth ; nitrogenous manuring began.

*Latvia* : During December the average temperature was relatively high and did not fall below zero until towards the middle of the month. The quantity of precipitation was considerably below the normal throughout the country. Cloudy, foggy weather predominated during the whole of the month and the thin snow-cover, which had protected the fields during the second week, completely disappeared.

According to correspondents' reports, the crop condition of winter wheat was above the average in 66.3 % of the cases, average in 29.5 % and below the average in 4.2 % ; the corresponding figures for winter rye are : 77.5 % ; 17.9 % and 4.6 %.

*Lithuania* : Weather conditions were rather favourable in December and sowings were effected under good conditions. Germination took place regularly and uniformly.

*Portugal* : In December the weather was rainy and characterized by low temperatures, with frequent frosts, especially in the north. In some districts the excessive moisture has damaged sowings. Generally, however, weather has not caused serious delay to seasonal operations, which were carried out fairly regularly. Cereals and especially wheat had a good appearance. Area under grain has increased in some districts and the use of selected seed has been greater than usual.

*Rumania* : Towards 15 December of last year autumn sowings had been completed. At this period, in the regions where weather permitted, preparatory work for spring sowings began. Although the fields had no snow cover, the sowings were not damaged by frost. Crop condition is everywhere satisfactory, except in Muntenia, part of Oltenia and Dobrudja, in which the drought during September and October hindered field work and the normal development of growth. In places winter cereals have been attacked by wireworms. In some departments of Bessarabia, Moldavia and Dobrudja the appearance of yellow and brown rust is reported, the appearance of this rust in autumn has, however, little ill-effect.

The following are the areas sown to winter cereals as on 1 December 1932, compared with the corresponding areas of the preceding two years : winter wheat : 5,861,000 acres against 5,198,000 sown as on 1 December 1931 and 5,508,000 as on 1 December 1930 ; winter rye : 713,000 acres (597,000 ; 695,000) ; winter barley : 162,000 (220,000 ; 222,000).

*Yugoslavia* : At the beginning of December the weather was changeable and rather cold and rain alternated with snow. The weather later improved and became more cold. Towards the end of the month snow fell nearly everywhere. Slight frosts did not damage winter sowings, crop condition of which towards the end of the month was very good.

*U. S. S. R.* : The Soviet Government has intimated to the International Institute of Agriculture that the areas sown to winter cereals in autumn 1932 are as follows : 28,058,000 acres to wheat ; 63,007,000 to rye and 711,000 to barley. On the whole, therefore, the area sown is 91,777,000 acres, 90.7 % of that planned (101,186,000 acres). For the separate crops the areas sown with respect to those planned are 77.7 % for wheat, 98.7 % for rye and 56.5 % for barley.

In autumn 1931 the total area sown to the above three cereals was 97,611,000 acres, of which 32,337,000 to wheat, 64,402,000 to rye and 872,000 to barley. With respect to the areas sown in 1931 those of 1932 have decreased by 13.2 % for wheat, 2.2 % for rye and 18.4 % for barley; the total area has decreased by 6.0 %.

On 1 January 1933 crop condition of all winter cereals according to the above communication was average

As regards spring sowings of wheat, barley and oats in the current season the Plan envisages an area of 118,647,000 acres, 13.9 % above that sown in spring 1932. This area is distributed as follows: wheat 59,553,000, barley 17,967,000 and oats 41,126,000 acres. With respect to the corresponding figures for spring 1932 there will therefore be increases of 11.1 %, 16.2 % and 17.0 % respectively.

In the second decade of December temperatures fell slightly and snow fell in the western sections of the European territory, while Southern Ukraine and Northern Caucasus remained without snow; in the third decade the weather became milder and the snow melted in the western regions. At the beginning of January the snow-line passed through Leningrad and Kiev, continued through southern Ukraine, returning eastward and passing northward of Rostov-on-Don and south of Stalingrad. Thus the western part of the European territory, the south of Ukraine, Northern Caucasus and part of the Lower Volga region were deprived of snow-cover. In other areas the thickness of the snow-cover at the beginning of January was as follows: in the Northern Region 8-20 inches; in Moscow province, Ivanovo and the Central Blackearth Region 0.4-3 inches; in the province of Gorki (formerly Nizhni-Novgorod) 0.8-4 inches; in the Middle Volga Region 2-6 inches, in the Ural Region 7-22 inches and in western Siberia 6-21 inches.

Temperatures in the north and east of the European territory of the Union were relatively low

Data on cereal production in 1932 are still wanting. In a speech of 11 January M. Stalin announced that cereal acquisitions by government organs in the current year encountered more difficulties than in the past year. To explain these difficulties by a poor harvest in 1932 is not possible since the latter was better than that of 1931. In 1932, it is true, the crops underwent much damage through unfavourable conditions in the Kuban and the Terek as also in some parts of Ukraine. There can be no doubt, however, that these losses represent only half those due to drought in the northeastern regions of the Union in 1931.

*Argentina* : In December harvesting and threshing was in full swing throughout the country. Confirmation has been obtained that yields are less satisfactory in both quantity and quality: specific weight of wheat is generally considered to be under the mean save in the south of Buenos Aires province and on the Pampa. As regards other cereals yields in the principal areas are satisfactory despite losses due to locusts and storms at time of harvesting.

*Canada* : The revised estimate of the area of mixed grains in 1932 is 1,184,000 acres compared with 1,187,000 in 1931 and 1,077,000, the average of 1926-1930; percentages: 99.8 and 109.9.

*United States* : In the week ended on 29 December abnormally mild weather caused the extensive snow-cover to disappear rapidly. In the Pacific Northwest the ground was largely bare in the wheat districts and damage by excessive cold was apparent in exposed places. Elsewhere condition showed little change. On 4 January practically no snow-cover remained over the main winter wheat belt. In the East

condition of winter grains was still satisfactory although locally in the Middle Atlantic States some December-planted wheat was rotting in the ground. Freezing and thawing occurred in places in the Ohio Valley but little damage was done; condition was still good in this area. Winter wheat and oats were reported to be improving in Texas while some improvement was noted in Oklahoma, although in that State condition was mainly poor to only fair. In the eastern third of Kansas, there was sufficient soil moisture and wheat had greened up a little but it continued very dry in the western third where condition of the crop was very poor or only poor. There was some snow-cover in the grain sections of the Pacific Northwest but the cold weather prevented any material growth. According to a telegram of 11 January condition remained unchanged from the previous week.

According to a telegram of 19 January the weather during the week had been mild. Crop condition was fairly good east of the Mississippi River but elsewhere the aspect was generally unfavourable

*Mexico* : Weather in November favoured wheat sowings. Area sown this year will be very much above that of last year.

*India* : In December the weather was rather dry and wheat required rain, soil moisture being small. In some areas excessive cold was reported. In mid-January light rains were beneficial but more abundant precipitation was desired.

According to a telegram of 19 January from the Punjab Department of Agriculture crop condition of wheat on 1 January was estimated at 90 % of the normal compared with 95 % on 1 January, 1932

*Japan* At the beginning of January weather was favourable to wheat and barley.

*Palestine* . The weather conditions during December have been exceptionally adverse to the growth of cereals, which were damaged by dry, cold easterly winds, together with a rainfall return lower than any previously recorded for December. Drought has been extreme especially in the South. Wheat and barley *apr* are in good condition in the North, but are dying or dead over large areas in the South. Winter wheat and barley are in a forward condition in the North, but backward where they have germinated in the South, sowing having not been completed. Sowing of oats is concluded, with poor germination in the South. On the whole, crop condition on 1 January was average in the North and very poor in the South, and germination was irregular.

*Algeria* : Well-distributed showers continued to fall in the early part of December. After a week of good weather with a rise in temperatures which favoured work in the fields, heavy rains fell toward the middle of the month in the centre and west, especially in Oran, where they caused flooding in some districts and made resowing necessary; precipitation was very small in the east, in the department of Constantine. The second half of December was less rainy, some showers fell here and there but a period of fine sunny weather revived the soil and allowed sowings to sprout vigorously. In the latter area - departments of Algiers and Oran - sowings of wheat and oats were almost completed on the part of the Europeans at the end of December but on native holdings were expected to continued throughout January; in the east, in the department of Constantine, sowings were favoured by early rains and were more advanced. On the whole it may be said that sowings were effected in average conditions and that soil moisture is generally sufficient though somewhat excessive in the west and rather small in the east.

Sprouting was generally regular save in the east for early sowings on heavy lands which suffered somewhat from the prolonged drought. Condition of the three cereals – wheat, barley, oats – was 100 on 1 January according to the system of the country, that is, average; at the same date last year it was 120.

In the territories of the south rains have been satisfactory and the condition of sowings was good.

*Egypt*: Weather has generally been favourable. Sowings are over and germination and growth are satisfactory. On the brackish and poor areas in the north of the Delta the plants have suffered from cold. Crop condition of wheat and barley on 1 January was 100 as at the same date last year.

*Tunisia*: Weather has been variable but generally the rains have been deficient. Germination was on the whole regular though sprouting of the first sowings was in several districts compromised by the inadequacy of the moisture.

*Union of South Africa*: The dry conditions in the southwestern districts of Cape Province during November favoured ripening. Very little rust was reported though there were cases of septoria in several areas. Harvesting began early, good yields were being obtained and prospects were most favourable.

*Australia*. (Telegram of 10 January): Harvesting has been delayed as a consequence of the cool weather experienced in South Australia and in Western Australia but has been completed under good conditions in New South Wales and Victoria. In certain districts harvest results are below expectations but in the principal areas of production they are very satisfactory. The grain is generally well-filled and heavy. The October estimate of 120 million centals (200 million bushels) is unchanged.

*New Zealand*: According to the Wheat Purchase Board the wheat crop will be a record amounting to 6 million centals (10 million bushels) against 3,950,000 (6,583,000) in 1931-32, an increase of over 50 % and 4,038,000 (8,220,000) in the five years ending 1930-31, an increase of over 20 %.

## MAIZE

*Argentina*: Crop condition is considered on the whole excellent. Forecasts are generally very encouraging despite the menace of locust invasion in the provinces of Entre-Rios and Santa Fé. Aided by the Ministry of Agriculture, growers have taken measures to restrict the invasion and limit losses.

*Surinam*: Owing to unfavourable weather the maize crop in the third quarter of 1932 was small.

*Egypt*: Harvesting of the *mih* crop is over. Unit yields are normal.

*Union of South Africa*: In the eastern Transvaal highveld and the northeastern Orange Free State, which make up the principal maize area of the Union, rains in November were sufficient to enable ploughing to be undertaken but generally the ground was too hard and the oxen too poor in condition for much progress to be made.

Elsewhere rainfall was irregular and insufficient to break the prolonged drought.

## Maize.

COUNTRIES	AREA					PRODUCTION							
	1932	1931	Average 1926 to 1930	% 1932		1932	1931	Average 1926 to 1930	1932	1931	Average 1926 to 1930	% 1932	
				1931	Average							1931	Average
			1,000 acres	= 100	= 100			1,000 centals			1,000 bushels of 56 lbs	= 100	= 100
Austria . .	148	152	145	97.2	102.4	2,690	2,794	2,508	4,803	4,990	4,479	96.3	107.2
Bulgaria . .	1,829	1,682	1,693	108.8	108.0	23,246	19,594	15,239	41,511	34,989	27,212	118.6	152.5
Spain . . .	1,082	1,053	1,044	102.8	103.7	14,775	14,778	13,215	26,384	26,389	23,598	100.0	111.8
France . . .	813	855	843	95.0	96.5	10,037	13,789	9,695	17,924	24,623	17,312	72.8	103.5
Greece . . .	587	618	513	95.0	114.5	2,200	3,499	3,597	3,900	6,248	6,423	63.0	61.3
Hungary . .	2,877	2,720	2,652	105.8	108.5	53,701	33,459	35,897	95,894	59,749	64,102	160.5	149.6
Italy 2) 1 f)	3,259	3,206	3,515	101.7	92.7	61,906	40,354	52,449	110,546	72,061	93,659	153.4	118.0
Italy 2) 1 f)	322	244	225	132.2	143.1	4,569	2,553	2,167	8,159	4,559	3,870	179.0	210.8
*Poland . .	240	243	222	98.7	108.2	...	2,296	1,968	...	4,099	3,515	...	...
Portugal . .	...	939	861	...	...	8,947	9,824	8,217	15,976	17,543	14,673	91.1	108.9
Rumania . .	11,775	11,749	10,851	100.2	108.5	119,711	133,674	101,569	213,771	238,704	181,374	89.6	117.9
Switzerland .	2	3	3	97.1	75.9	60	64	77	106	114	138	93.1	77.1
Czechoslov .	331	344	347	96.2	95.6	6,819	5,020	5,272	12,176	8,965	9,415	135.8	129.3
Yugoslavia .	6,442	6,168	5,734	104.4	112.4	99,646	70,623	65,918	177,940	126,113	117,711	141.1	151.2
* U. S. S. R. .	9,084	9,741	8,483	93.3	107.1	...	...	69,622	...	...	124,325	...	...
Canada . . .	130	132	159	98.7	81.9	2,832	3,051	3,172	5,057	5,449	5,665	92.8	89.3
United Stat. .	107,729	105,301	99,456	102.3	108.3	1,628,505	1,437,691	1,441,278	2,908,045	2,567,306	2,573,710	113.3	113.0
Mexico . . .	7,945	8,346	7,692	95.2	103.3	42,816	47,150	40,990	76,458	84,196	73,196	90.8	104.5
Syria a. Leb. .	56	65	120	86.3	47.0	476	730	1,352	849	1,303	2,415	65.2	35.2
Algeria . . .	16	24	24	69.7	68.6	101	133	144	181	238	257	76.2	70.4
Egypt . . .	...	2,194	2,066	...	...	42,405	43,793	42,604	75,724	78,202	75,079	96.8	99.5
Eritrea . . .	7	22	16	33.3	47.6	66	240	97	118	429	174	27.5	67.9
*Kenya 3) .	177	161	199	110.4	89.1	...	1,525	2,804	...	2,724	5,008	...	...
It. Somalil. .	24	53	39	45.1	61.0	213	521	417	380	931	745	40.8	51.0
Tunis 4) . .	44	45	41	99.0	108.2	121	110	109	217	197	194	110.0	111.3
TOTALS . .	148,551	145,915	138,039	101.8	107.6	2,125,842	1,883,444	1,845,983	3,796,119	3,363,298	3,296,041	112.9	115.2

\* Countries not included in the totals. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production but not those of area are available. — §) Spring crop (maggengo). — f) Summer crop (cinquantino). — 1) Calculated figure. — 2) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 3) European crop. — 4) Maize and sorghum.

## RICE

The second estimate of the crop now being marketed in Burma is 11,117 million pounds milled whole rice, an increase of 12 % on the corresponding estimate for the crop of 1931-32, though the increase in area sown was less than 0.2 %. The 1931-32 crop was, however, a very small one consequent on the failure of the November rains in that season, while the weather in the past season has on the other hand been favourable in Lower Burma. In Lower Burma, from which the bulk of the production is derived, the condition of the crop in December was good, except in Pegu, where rather large areas were planted late, and in parts of Tharrawaddy and Henzada, where the showers at the end of the rains proved too late to repair the damage caused earlier in the season. As reported in the December "Crop Report" the first estimate of the export surplus from the 1932-33 crop is 6,962 million pounds of whole milled rice against the corresponding estimate of 5,853 million pounds in the previous season. The December estimate

of this year's export surplus has been exceeded only by that of 1931, which remained unchanged in the February estimate for that year. A comparison of the December and February estimates for the past ten years shows that allowing for any modification in the later estimate of the 1933 export surplus it will in all probability remain one of the two largest in the decade. In the following table comparative figures for the preceding ten seasons are given, together with data of arrivals by rail and boat at Rangoon, shipments from Rangoon to foreign ports and to India and total exports from Burma. All the data of crop movement refer to calendar years; as export of the new crop begins in the middle of December there is relatively little overlap.

The proportion of the total export of Burma shipped from Rangoon in the nine years 1923-31 was 73 %; assuming that the shipments from Rangoon in 1932 bore this proportion to the total there was very little carryover of last season's crop into 1933. The large increase in the export surplus for this year remains, however, a depressing factor on the market.

*Movement of Burma crop.*

(million pounds)

YEAR	Export surplus of rice and rice products		Arrivals of "5 parts cargo rice" (1) by rail and boat at Rangoon	Exports of rice and rice products	
	(December estimate)	(February estimate)		Rangoon	Total Burma
1933 . . . . .	7,728	...	...	...	...
1932 . . . . .	6,496	6,048	3,644	4,588	...
1931 . . . . .	7,840	7,840	4,381	5,492	7,500
1930 . . . . .	6,944	6,832	4,888	5,412	7,202
1929 . . . . .	6,675	6,451	4,791	4,590	6,199
1928 . . . . .	7,078	6,756	4,791	4,644	6,235
1927 . . . . .	7,224	7,280	5,179	4,968	6,797
1926 . . . . .	6,664	6,131	4,236	4,534	6,078
1925 . . . . .	5,864	6,079	5,354	5,230	7,559
1924 . . . . .	4,081	4,207	4,113	3,884	5,181
1923 . . . . .	5,190	5,291	4,104	3,956	4,987

1) That is, four parts milled rice and one part rough rice.

In French Indo-China an estimate of production is now available for Cochin-China, the chief exporting area, giving a decrease of 2.7 % on the production of 1931-32 and an increase of 3.2 % on the average of the five years ending 1930-31. A private estimate of the surplus available for export from Saïgon in 1933 gives a figure of 2,535 million pounds, 220 million smaller than the estimate of the same source for 1932. The export of rice and rice products from Saïgon in the quinquennium 1927-31 was 2,799 million pounds.

In Siam the area planted in 60 provinces up to the end of October amounted to 7,223,000 acres against 6,974,000 in the same provinces at the same date in the previous season. The condition of the crop was good in 27 provinces (including 20 in the five inner circles), fairly good in 29 (including 9 in the five inner circles), and not good in 2 (both in the five inner circles). Crop condition therefore showed an improvement on that of the previous month, particularly in the inner circles,

from which practically all the export is derived. A private estimate of the export surplus places it at about 3,400 million pounds, that is, 450 million larger than that of 1932.

In the major exporting regions as a whole the total surplus available for export this year is thus much larger than that available in 1932 and is the largest since 1931, when, as in the current year, a large surplus in Burma raised the total to a high level.

### Rice.

COUNTRIES	AREA						PRODUCTION														
	1932/33	1931/32	Average 1926/27 to 1930/31	% 1932/33		1932/33	1931/32	Average 1926/27 to 1930/31	1932/33	1931/32	Average 1926/27 to 1930/31	% 1932/33									
														1931/ 1932	Aver- age						
				1931/ 1932	Aver- age																
1,000 acres			= 100	= 100	1,000 centals			1,000 bushels of 45 lb			= 100	= 100									
Bulgaria . .	13	17	18	77.8	72.8	304	307	350	675	683	777	98.8	86.8								
Spain	123	113	121	108.7	101.8	7,019	5,869	6,782	15,997	13,042	15,071	119.6	103.5								
Italy 1) . .	335	359	350	93.2	95.6	14,476	14,598	14,689	32,169	32,440	32,642	99.2	98.6								
United States	869	978	963	88.9	90.3	17,710	20,705	19,458	39,356	46,012	43,240	85.5	91.0								
Korea . .	3,824	4,104	3,922	93.2	97.5	64,297	63,283	62,987	142,879	140,625	139,967	101.6	102.1								
Formosa (a)	700	678	628	103.3	111.5	16,731	14,466	12,455	37,180	32,146	27,678	115.7	134.3								
Formosa (b)	...	888	815	...	...	19,229	15,355	14,464	42,731	34,121	32,143	125.2	132.9								
* India (c)	78,791	81,367	77,333	96.8	101.6	...	1,130,438	1,058,265	...	2,512,033	2,351,653	...	...								
Indo China	981	877	1,085	111.8	90.3	7,716	5,422	9,186	17,147	12,160	20,413	141.0	84.0								
Annam (c)	1,409	1,411	1,464	99.8	96.2	14,771	10,737	12,408	32,824	23,859	27,573	137.6	119.0								
Cochin China	5,066	4,932	5,161	102.7	98.1	48,502	49,839	46,998	107,780	110,750	104,439	97.3	103.2								
Laos . .	1,137	1,161	1,118	97.9	101.7	7,606	7,275	7,716	16,902	16,167	17,147	104.5	98.6								
Tonkin (c)	1,181	1,184	1,293	99.8	91.4	13,089	13,147	15,882	29,086	29,215	35,292	99.6	82.4								
month	7,983	7,962	7,829	100.3	102.0	240,764	220,133	242,738	535,020	489,174	539,406	109.4	99.2								
Japan	8,071	7,593	7,406	106.3	107.7	112,105	107,188	106,961	249,118	238,192	237,687	104.6	104.8								
Java and (e)	1,063	1,087	1,127	97.7	94.3	9,094	8,796	9,601	20,209	19,547	21,336	103.4	94.7								
Madura (f)																					
TOTALS	33,643	33,344	33,390	100.9	100.7	593,413	557,170	582,675	1,318,673	1,238,133	1,294,811	106.5	101.8								

\* Countries not included in the totals — a) First crop. — b) Second crop. — c) First semester. — d) Second semester — e) Irrigated rice. — f) Unirrigated rice. — 1) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — (c) All data of area (including the average) are those of the second estimate; those of production are final.

The second estimate of area under rice in India, excluding Burma, is 66,252,000 acres against 68,849,000 in 1931-32, a decrease of 3.8%, decreases being indicated in all provinces save Assam. In Bengal, the principal rice-producing province, an increase of 0.2% is reported in the area under winter rice, the main crop, and an increase of 2.5% in production, rainfall conditions were favourable to preparatory tillage for transplanted padi, to sowings and to growth and final development, in the second week of January harvesting was nearly complete and crop condition was good. The production of autumn rice in Bengal is estimated to be slightly larger despite a decrease in area. In Bihar and Orissa the winter crop, which accounts for about three-fourths of the total and of which harvesting and threshing were continuing at the beginning of January, is estimated to be 29% smaller, the effect of insufficient rainfall having been added to a

decrease of 7% in area; the autumn crop shows a decrease of 23%. For Madras, the third producing province, a production estimate is not made in December but that of area shows a decrease of 0.5%; the rains were falling off and on 7 January crop condition was generally fair. In view of the general decrease in area and of the reports so far available from the leading provinces a smaller production may be expected for India as a whole, excluding Burma.

As regards other countries no information modifying that given last month has become available. The increase in supplies on the one hand and the continued depression in purchasing power on the other are likely to maintain prices at a low level.

C. J. R.

*Surman* : Crop condition in the third quarter of 1932 was very good. A large crop was expected.

*Formosa* : Growing conditions of the first crop were good on 1 January in some parts of the central and northern provinces and in a great part of the south provinces.

*India* . In Bengal dry weather prevailed during December. In the middle of the month harvesting of winter padi was in full swing. In Bihar and Orissa the weather in the first half of December was dry, in the latter half of the month light rains fell, harvesting of winter padi was making progress and threshing continued. Rainfall varied from heavy to moderate in the first half of December and was slight in the latter half.

*French Indo-China* : From the estimate now available for production in Cochin-China it seems that a good average crop has been obtained.

If the forecasts previously made for the second crop in Tonkin and the crop in Cambodia are confirmed it would appear, therefore, that total production in the Union has been very good, attaining or perhaps even exceeding 13,000 million pounds, it would appear larger than any crop in the last ten years, excepting that of 1927-28, which was quite an exceptional year, and in any case almost certainly above the relatively very small crop of last season.

*British Malaya* : In November weather was generally very wet on the west of the main range, in west Pahang and in Kelantan precipitation was about average.

In parts of South and Central Kedah and in certain localities in Krian planting was still not quite completed at the end of November and in these late-planted areas only a poor or at most a medium crop could be anticipated. Damage by floods was reported from several areas but was in general small. Crop reports were generally good for North Kedah, Province Wellesley and most of Perak excluding Krian, in the last-named important area prospects were variable. In the coastal areas of Kelantan harvesting was carried out very rapidly and was completed by mid-November, so avoiding the later floods. A good crop was anticipated in Negri Sembilan and in Pahang production was expected to be a record, partly on account of the very considerable increase in the area planted.

*French West Africa* . In French Guinea, Senegal and the Sudan, which together supply nearly four-fifths on the production, the crop is good, the rains having been regular and sufficient. In the Ivory Coast, of which the production accounts for about one-fifth of the total, the rains in the third quarter diminished the losses caused at



the beginning of the growing season by drought so that on the whole the crop in French West Africa is a good one.

*Egypt*: The harvesting of the *mlu* crop is over and preparations and storing is almost completed. Unit yields are above average.

## POTATOES

To the data of production so far received must be added those of Denmark, Northern Ireland and France, the last-named country occupying the third place amongst the large producers (excluding the U. S. S. R.). In Denmark, pro-

### Potatoes

COUNTRIES	AREA					PRODUCTION							
	1932	1931	Average 1926 to 1930	% 1932		1932	1931	Average 1926 to 1930	1932	1931	Average 1926 to 1930	% 1932	
				1931 = 100	Average = 100							1931 = 100	Average = 100
1,000 acres					1,000 centals			1,000 bushels of 60 lbs					
Germany . . .	7,114	6,979	6,943	101.9	102.5	1,036,538	967,091	864,334	1,727,529	1,611,787	1,440,527	107.2	119.9
Austria . . .	511	479	459	106.7	111.3	50,235	59,895	52,508	83,723	99,823	87,512	83.9	95.7
Belgium . . .	435	425	410	102.4	106.3	77,704	78,857	74,142	129,503	131,425	123,567	98.5	104.8
Bulgaria . . .	37	31	28	118.3	134.3	2,134	1,338	946	3,556	2,231	1,576	159.4	225.7
Denmark . . .	172	157	169	110.1	101.8	29,542	19,342	20,276	49,236	32,236	33,793	152.7	145.7
Spain . . .	1,042	1,024	832	101.7	125.2	113,118	103,110	85,576	188,526	171,846	142,623	109.7	132.2
Estonia . . .	166	168	166	98.8	99.9	15,148	18,839	16,688	25,245	31,398	27,813	80.4	90.8
* Irish F. State	348	346	363	100.6	96.0	...	43,279	53,605	...	72,132	89,341	...	...
Finland . . .	192	174	173	110.5	111.1	22,168	15,997	17,419	36,945	26,661	29,030	138.6	127.3
France . . .	3,480	3,533	3,589	98.5	97.0	349,832	359,350	308,759	583,041	598,904	514,588	97.4	113.3
Engl. a. W.	504	447	489	112.7	103.0	74,099	53,917	70,162	123,499	89,861	116,934	137.4	105.6
Scotland . . .	149	128	140	116.0	105.9	25,581	15,680	21,258	42,635	26,133	35,429	163.1	120.3
N. Ireland . .	142	134	150	105.6	94.5	25,090	15,635	23,567	41,817	26,058	39,277	160.5	106.5
Greece . . .	40	34	27	115.2	148.3	2,205	1,383	908	3,674	2,306	1,513	159.3	242.8
Hungary . . .	729	701	658	104.1	110.9	37,153	31,912	41,269	61,921	53,185	68,781	116.4	90.0
Italy 1) . . .	1,022	1,019	870	100.3	117.5	62,251	43,311	42,804	103,750	72,184	71,339	143.7	145.4
Latvia . . .	253	247	207	102.4	122.0	26,569	25,729	18,645	44,280	42,880	31,075	103.3	142.5
Lithuania . .	427	409	347	104.4	123.0	40,281	43,254	33,644	67,134	72,089	56,072	93.1	119.7
Luxemburg . .	40	41	40	96.0	99.0	5,115	4,700	3,652	8,524	7,832	6,086	108.8	140.1
Malta . . .	7	7	7	108.1	100.3	564	670	636	941	1,117	1,060	84.2	88.7
Norway . . .	123	116	120	105.9	103.0	22,818	17,071	18,150	38,029	28,451	30,249	133.7	125.7
Netherlands .	434	406	428	107.1	101.5	81,130	60,322	72,753	135,215	100,535	121,253	134.5	111.5
Poland . . .	6,709	6,716	6,250	99.9	107.3	593,707	683,179	610,520	989,492	1,138,609	1,017,513	86.9	97.2
* Rumania 2)	471	474	484	99.4	97.3	...	40,789	43,463	...	67,981	72,437	...	...
Sweden . . .	337	327	354	103.1	95.2	43,872	33,020	36,508	73,119	55,033	60,846	132.9	120.2
Switzerland .	115	113	119	102.0	97.0	14,813	16,898	14,971	24,688	18,164	24,952	87.7	98.9
Czechoslov. .	1,811	1,778	1,772	101.9	102.2	185,236	214,429	194,761	308,720	357,375	324,594	86.4	95.1
* U. S. S. R. .	13,732	15,104	13,671	—	—	...	...	990,152	...	...	1,650,221	...	...
Canada . . .	522	584	562	89.4	92.9	39,416	52,305	46,352	65,693	87,175	77,252	75.4	85.0
United States	3,368	3,375	3,097	99.8	108.8	213,953	225,186	214,002	356,589	375,310	356,671	95.0	100.0
Java and M.	57	44	50	129.9	114.5	2,425	1,761	2,053	4,042	2,936	3,421	137.7	118.2
Syria a. Leb.	18	20	16	87.8	115.6	801	971	1,089	1,335	1,619	1,815	82.4	73.5
Algeria ( c )	24	29	30	84.8	80.1	958	723	874	1,597	1,205	1,457	132.5	109.6
Algeria ( m )	28	24	25	117.1	112.2	1,025	949	918	1,709	1,582	1,530	108.0	111.6
TOTALS . . .	30,008	29,669	28,527	101.1	105.2	3,195,481	3,166,824	2,910,144	5,325,707	5,277,950	4,850,148	100.9	109.8

\* Countries not included in the totals. — c) Winter, so-called early, potatoes. — m) Main season crop. — 1) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 2) Unmixed crops. — 3) Area sown as on 20 June 1932.

duction is especially abundant, attaining the highest level recorded since 1922; it not only exceeds that of last year by 52.7 % but the average of the preceding quinquennium by 45.7 %. Though the numerical data for Denmark have only a relatively limited importance in world production they merit attention as a consequence of the intensive pig-rearing carried on in that country. In this connection it may be remarked that the number of pigs of four months and over for fattening as recorded by the special census of 19 November 1932 shows an increase of 5.2 % on that of 20 April 1932.

Northern Ireland also reports a large crop, 60.5 % above the low figure of 1931 and 6.5 % above the quinquennial mean. High yields have also been obtained in France despite a slight reduction in area and the 1932 figure, though 2.6 % below the large one of 1931, which was exceeded only by the record crop of 1927, is 13.3 % above the average.

Germany, which is by far the leading producer, shows an increase of about 1.7 million long tons (1.9 million short tons) on the previous already high figure, thus recording an increase of 7.2 % on the 1931 crop and one of almost 20 % on the five-year mean, approaching very near to the record figure of 1930.

The good yields of 1932 are largely attributable to the favourable weather that prevailed in the principal European producing countries save Poland and Czechoslovakia, which have low yields.

In North America, which contributes, however, only about 7 % of world production outside the U. S. S. R., the 1932 crop in the United States only attained the quinquennial mean and in Canada was distinctly deficitary.

In the following table are indicated the unit-yields in the twelve principal producing countries.

*Yield per acre.*

Countries	1932	1931 (centals)	Average 1926 to 1930	1932	1931 (bushels)	Average 1926 to 1930
Germany . . . . .	145.7	138.6	121.5	242.8	230.9	207.6
Poland . . . . .	88.5	101.7	97.7	147.5	169.5	162.8
France . . . . .	100.5	101.7	86.1	167.0	169.5	143.5
Czechoslovakia . . . . .	102.2	120.5	120.5	170.4	200.9	200.9
United States . . . . .	63.5	66.7	69.1	105.9	111.2	115.2
Great Britain and Northern Ireland . . . . .	157.3	120.2	147.3	262.1	200.3	245.5
Spain . . . . .	108.8	100.8	102.8	181.3	168.0	171.3
Netherlands . . . . .	186.6	148.8	170.2	310.9	248.0	283.7
Belgium . . . . .	178.7	185.6	180.8	297.8	309.3	301.2
Italy . . . . .	60.8	42.6	49.2	101.4	70.9	82.1
Australia . . . . .	98.1	124.9	114.2	163.6	208.2	190.3
Canada . . . . .	75.3	89.7	82.6	125.5	149.4	137.7

The data now available may be considered as practically complete, those still lacking having scarcely any appreciable influence on the total.

The production of 1932 may therefore be said to be a large one, slightly above the good crop of 1931 and 9.8 % above the quinquennial mean.

*Great Britain and Northern Ireland :* In Northern Ireland potatoes stored in pits are keeping very satisfactorily in some districts but in others there is a considerable percentage of rotting.

*Palestine :* The early sown potatoes crop is poor. Sowing is still in progress.

*Algeria :* Thanks to well-distributed rainfall since the end of November and to the alternation of sunny mild periods, early potatoes in the coastal region looked very well at the end of December.

## SUGAR

The table on the following page gives the prices of sugar on the New York, London, Surabaya, Prague, Paris and Magdeburg markets for each Thursday in 1932. An examination of these quotations shows that in the first months of 1932 the fall in sugar prices was renewed, the slight recovery of August 1931, following on the Brussels agreement to adopt the Chadbourne plan for the limitation of production and export, not having been maintained.

The International Sugar Council was to have met on 5 January 1932 but the meeting was postponed owing to the reported difficulty of Cuba and Java in coming to an agreement. As such an agreement was considered a decisive factor in the solution of the sugar crisis disappointment at the delay had an unfavourable repercussion on prices, which showed a distinct fall in January. The decline was not checked by the new estimates of beet-sugar production in 1931-32, which were below those of the preceding season. The declaration of Mr Chadbourne that a decrease in the large output of Java, forecast at 2,500,000 tons, could not be expected in the current season, the cutting season being near, had also a depressing effect on the market.

Meanwhile Cuba, in conformity with the decree of President Machado, had commenced grinding on 15 January and it was feared that a further decree would be necessary to prevent production exceeding the desired limits.

The general depression of the markets was steadily deepening, due to the disappointment felt at the difficulties met with by the Chadbourne plan and to the information circulating concerning the positions taken up by the two great producers, Cuba and Java.

Cuba was asked to restrict its production by about 1,000,000 tons with respect to the preceding season but refused to accept such a heavy reduction unless Java considerably decreased the quantity of the coming crop. The representatives of Java on the other hand held that for the time being existing contracts prevented any agreement to decrease the cane cut and sent to the factories, the more so since the delegates to the conference did not represent all the factories, some of the latter having retained their liberty of action. There was a disposition to accept a large reduction for 1932-33 but this solution apparently did not meet the desires of Cuba.

While these negotiations, accompanied by rumours sometimes favourable sometimes unfavourable, continued prices fell day by day.

## Sugar prices.

DATE.	New-York	London		Soerabaja	Prague	Paris	Magdeburg
	Cuba centrifugals 96° c. and f. cents per lb.	Cane centrifugals 96° c. i. f. sh. per 112 lb.	Granulated duty free sh. per 112 lb	s. h. s. spot fl. per 100 kg.	Raw sugar 88° spot cruwns per 100 Kg.	No. 3 Crystallised frs. per 100 kg.	Refined — Marks per 50 kg.
7 January 1932...	1.15	7/-	20/9	6.62	58.50	218.50	31.65
14 " " ...	1.16	7/1	20/9	6.62	59.75	219.25	31.47
21 " " ...	1.10	7/-	20/9	6.55	59.50	216.75	31.52
28 " " ...	1.08	6/10	20/9	6.62	59.50	213.50	31.60
4 February 1932...	1.02	6/9	...	6.60	59.00	217.75	31.80
11 " " ...	0.90	6/4	n. c.	6.50	60.00	218.25	—
18 " " ...	0.98	6/7	20/9	6.50	59.50	216.00	31.45
25 " " ...	0.88	6/3	20/9	6.37	58.00	217.25	n. c.
3 March 1932...	0.85	6/3	20/-	6.37	58.75	n. c.	31.77
10 " " ...	0.79	5/6	19/9	6.37	57.50	215.25	31.60
17 " " ...	0.75	5/1	19/6	6.37	56.50	214.50	31.60
24 " " ...	0.73	5/4	19/6	6.37	55.75	215.00	31.60
31 " " ...	0.69	5/3	19/6	6.37	56.50	216.75	31.60
7 April 1932...	0.60	4/3	19/-	6.37	54.25	214.75	32.05
14 " " ...	0.63	4/3	18/6	6.37	54.00	218.00	31.75
21 " " ...	0.61	4/6	18/6	6.35	53.50	221.50	32.00
28 " " ...	0.63	4/7	18/6	6.35	52.50	220.25	31.75
5 May 1932...	0.60	4/4	18/1	6.35	49.75	n. c.	—
12 " " ...	0.60	4/8	18/4	6.35	49.00	n. c.	31.90
19 " " ...	0.60	4/9	18/5	6.30	49.00	221.50	31.90
26 " " ...	0.58	4/6	18/5	6.25	49.00	221.50	31.90
2 June 1932...	0.57	4/6	18/5	6.20	48.50	224.25	32.05
9 " " ...	0.62	4/9	18/8	6.00	49.75	225.50	32.40
16 " " ...	0.80	5/1	19/-	6.00	52.50	225.50	32.05
23 " " ...	0.80	5/7	19/3	6.00	53.25	229.00	32.35
30 " " ...	0.80	5/9	19/5	6.00	55.50	224.50	32.05
7 July 1932...	0.95	6.-	19/5	6.00	58.50	228.50	32.20
14 " " ...	1.10	6/1	19/8	6.00	60.50	—	32.20
21 " " ...	1.10	6/2	19/8	6.00	59.50	230.50	32.37
28 " " ...	1.07	6/1	19/11	6.00	60.25	231.25	32.50
4 August 1932...	1.08	—	—	6.00	60.00	235.50	32.67
11 " " ...	1.15	—	—	6.00	60.00	235.50	32.52
18 " " ...	1.18	6/7	20/2	6.00	60.00	234.25	32.67
25 " " ...	1.18	6/6	20/2	6.00	59.75	232.50	32.67
1 September 1932...	1.18	—	20/2	6.00	59.75	226.50	32.85
8 " " ...	1.18	—	20/2	6.00	59.50	219.50	32.85
15 " " ...	1.10	—	20/-	6.05	58.00	222.25	32.85
22 " " ...	1.15	5/7	19/5	6.05	58.50	219.50	32.67
29 " " ...	1.18	6/-	19/5	6.05	58.25	216.75	32.85
6 October 1932...	1.15	5/10	19/9	6.05	59.50	212.00	31.50
13 " " ...	1.20	6/1	19/9	6.05	60.75	210.50	31.50
20 " " ...	1.15	5/11	19/5	6.05	60.50	209.75	31.50
27 " " ...	1.07	5/9	—	6.00	56.50	208.50	31.50
3 November 1932...	1.10	5/10	19/2	6.00	57.75	209.00	31.25
10 " " ...	1.10	5/11	19/5	6.00	59.00	211.00	31.25
17 " " ...	1.10	5/9	19/5	5.97	58.25	212.50	31.25
24 " " ...	1.00	5/9	19/5	5.97	58.00	212.00	31.25
1 December 1932...	0.90	5/6	19/2	6.00	56.50	211.50	31.25
8 " " ...	0.85	5/6	—	6.00	—	211.50	31.25
15 " " ...	0.85	5/1	18/11	6.00	56.25	210.75	31.37
22 " " ...	0.82	5/1	—	6.00	55.50	210.50	31.20
29 " " ...	0.75	5/-	—	6.00	—	208.75	31.25

COUNTRIES	PRODUCTION 1 SEPT - 31 DEC		TOTAL PRODUCTION DURING THE SEASON					
	1932-33	1931-32	1932-33 1)	1931-32	Average 1926-27 to 1930-31	% 1932-33		
						1931-32 = 100	Average = 100	
thousand cents	thousand cents							
Germany . . . . .	23,180	34,297	23,869	35,160	42,889	68	56	
Austria . . . . .	3,423	3,379	3,638	3,585	2,506	101	145	
Belgium . . . . .	—	—	5,467	4,422	5,733	124	95	
Bulgaria . . . . .	2) 572	2) 480	572	563	843	102	68	
Denmark . . . . .	—	—	4,228	2,691	3,243	157	130	
Spain . . . . .	—	—	4,805	7,954	4,988	60	96	
Irish Free State . . . . .	434	125	591	125	442	472	134	
Finland . . . . .	123	83	148	93	76	159	194	
France . . . . .	3) 17,614	3) 17,708	21,766	18,927	20,299	115	107	
Great Britain . . . . .	7,282	5,890	7,282	5,890	5,718	124	127	
Hungary . . . . .	4) 2,267	4) 2,739	2,315	2,761	4,685	84	49	
Italy . . . . .	—	—	6,965	8,348	8,218	83	85	
Latvia . . . . .	—	—	573	265	83	217	693	
Netherlands . . . . .	4) 3,924	4) 3,546	4,960	3,687	6,162	134	80	
Poland . . . . .	4) 8,636	4) 10,105	9,182	10,880	15,911	84	58	
Rumania . . . . .	—	—	1,455	1,138	3,013	128	48	
Sweden . . . . .	—	—	4,530	3,166	2,723	146	170	
Switzerland . . . . .	—	—	139	134	148	103	93	
Czechoslovakia . . . . .	13,783	17,722	13,891	17,956	24,384	77	57	
Turkey in Europe . . . . .	—	—	408	353	93	116	439	
Yugoslavia . . . . .	4) 1,658	4) 1,633	1,918	1,903	2,272	101	84	
Total Europe a) . . . .	—	—	118,802	130,001	154,434	91	77	
U. S. S. R. . . . .	—	—	28,219	33,625	26,723	84	106	
Total Europe b) . . . .	—	—	147,021	163,626	181,157	90	81	
Canada . . . . .	—	—	1,050	1,071	818	98	128	
United States . . . . .	—	—	28,129	24,860	22,697	113	124	
Total North America . . . .	—	—	29,179	25,931	23,515	113	124	
Japan . . . . .	—	—	582	592	517	98	113	
Turkey in Asia . . . . .	—	—	251	195	46	129	545	
Total Asia . . . .	—	—	833	787	563	106	148	
Australia . . . . .	—	—	122	118	64	103	191	
GENERAL TOTALS ( a ) . . . .	—	—	148,936	156,837	178,576	95	83	
( b ) . . . .	—	—	177,155	190,462	205,299	93	86	

a) Not including the U. S. S. R. — b) Including the U. S. S. R. — 1) Approximate data. — 2) To 15 November. — 3) To 15 December. — 4) To the end of November. — 5) Average 1927-28 to 1930-31.

of May it was known that areas sown to sugar-beet in Europe had considerably decreased with respect to 1931 in Germany, Spain, Hungary, Italy, Poland and Czechoslovakia there was no improvement on the markets of New York, Prague or Surabaya; on the other hand the London market responded slightly with a rise of several points in its quotations.

Throughout May the fall in prices continued but at the beginning of June, on the publication of a decree by President Machado fixing not only production but quotas for export to the United States and when information as to a private pool for the segregation of about 800,000 tons became available, quotations, after having descended to the lowest level of the year, began to rise slowly. The pool was not in fact formed but the Cuban Government in a decree of 2 July took more or less analogous measures. The rise continued spasmodically in the follow-

*The figures in the following table are supplied  
by the Association Internationale Sucrière de Vienna.*

COUNTRIES	Sugar beet		Raw sugar	
	1932	1931	1932-33	1931-32
Thousand cents				
Germany . . . . .	148,770	207,550	23,869	35,160
Austria . . . . .	22,329	21,410	3,647	3,584
Belgium . . . . .	42,108	29,233	5,586	4,521
Denmark . . . . .	28,096	16,259	4,228	2,691
Irish Free State . . . . .	3,395	768	584	123
Finland . . . . .	1,173	691	140	93
Hungary . . . . .	15,466	18,012	2,273	2,761
Italy . . . . .	51,588	54,895	6,945	7,968
Poland . . . . .	51,964	60,331	9,182	10,873
Rumania . . . . .	8,819	7,716	1,372	1,057
Sweden . . . . .	33,481	18,793	5,188	3,166
Czechoslovakia . . . . .	79,281	97,643	13,891	17,956
Turkey . . . . .	2,392	2,275	408	353
Yugoslavia . . . . .	14,228	13,420	1,869	1,903
Total . . . . .	503,090	548,996	79,182	92,209
Short tons				
Germany . . . . .	7,438,379	10,377,370	1,193,426	1,757,960
Austria . . . . .	1,116,420	1,070,470	182,356	179,180
Belgium . . . . .	2,110,000	1,462,000	279,289	226,042
Denmark . . . . .	1,404,800	812,900	211,390	134,530
Irish Free State . . . . .	170,000	38,410	29,200	6,150
Finland . . . . .	58,600	34,530	6,996	4,633
Hungary . . . . .	773,304	900,598	113,600	138,060
Italy . . . . .	2,580,000	2,740,000	347,000	398,400
Poland . . . . .	2,598,180	3,016,523	459,070	543,640
Rumania . . . . .	400,000	390,000	68,580	52,849
Sweden . . . . .	1,674,040	939,629	259,380	158,304
Czechoslovakia . . . . .	3,964,017	4,882,107	694,550	897,764
Turkey . . . . .	119,600	113,800	20,400	18,000
Yugoslavia . . . . .	711,368	671,007	93,452	95,132
Total . . . . .	25,118,708	27,449,344	3,958,689	4,610,644

ing months, information from Europe of a considerable reduction in beet-sugar production as well as news from Java of a very heavy reduction in areas devoted to cane in the coming season, becoming available. From the end of September, however, with the intensification of the world crisis, prices fell again and continued doing so until the end of the year, despite the international agreements for the restriction of production in Peru and in Java, the decree of President Machado

on 2 November restricting that of Cuba and the decrease forecast for the world production of cane-sugar in 1932-33.

On the whole markets remained depressed and weak in 1932 and prices fell to a lower level than in previous years despite the international agreements.

Quotations on London, Prague, New York and Surabaya follow practically the same course but those of the first three fluctuate more markedly than those of Surabaya.

The Magdeburg and Paris markets follow the general movement, allowing for the fact that, like other European markets, they do not markedly reflect outside fluctuations, their prices being influenced and limited by internal agreements and decrees.

With the data of beet-sugar production for the current season cabled from Australia the table of world beet-sugar production is complete. Taking into account also the modifications made after the publication of the Crop Report for December, world beet-sugar production excluding the U. S. S. R. will be seen to be 5 % below that in 1931-32 and 17 % below the average of the five seasons ending 1930-31.

The data of the U. S. S. R. published in the last number have undergone no change, precise information being wanting; given the difficulty experienced in lifting, the fact that part of the crop remains in the ground and that transport to the factories has not been completed, it may be taken that the figure indicated in the table is considerably above the final estimate.

E. R.

*Belgium* : Transport of beet to the factory was completed in good conditions.

*France* : Carting of the beet was finished during December under very good conditions thanks to the favourable weather; sugar manufacture had been nearly completed towards the end of the month. According to an inquiry made during November by the General Confederation of Beet-growers, the average density of the juice in the 1931-32 season was in general slightly above 8°, falling to 7 8° for one department only and reaching 8 4° on the average for the most favoured producing departments. Under these conditions and despite the large quantity of beet harvested, sugar production will remain within the limits anticipated at sowing time and will not exceed the fixed quota of 18,200,000 centals (838,000 short tons) of the refined product, a quantity about 3 % below that produced during last season and nearly 11 % below the average production of the five-year period 1926-27 to 1930-31.

It should be noted that this estimate, made nearly two months ago, is in contradiction to the last figure of production given by the *Comité Central des Fabricants de Sucre* and published in the table.

Production of beet for distillation this year is 24,802,000 centals (1,240,100 short tons), showing an increase of 9.2 % on that of last year 22,709,000 centals (1,135,500 short tons), and an increase of 24.5 % on the average of the five years ending 1930; 19,923,000 centals (996,100 short tons).

*Antigua, British West Indies* : Heavy and prolonged rains have damaged ratoons and delayed planting of the 1934 crop.

*Production of Cane Sugar.*

COUNTRIES	1932-33 (1)	1931-32	Average 1926-27 to 1930-31	1932-33 (1)	1931-32	Average 1926-27 to 1930-31	Percentages for 1932-33	
							1931-32 = 100	Average = 100
	Thousand centals	Short tons	%					
AMERICA.								
Argentina . . . . .	7,659	7,623	8,758	383,000	381,120	437,919	100	87
Brazil . . . . .	21,385	21,826	19,586	1,070,000	1,090,000	979,281	98	109
Cuba . . . . .	44,093	58,270	96,318	2,000,000	2,913,441	4,815,835	76	46
Ecuador . . . . .	265	504	442	13,000	25,000	22,084	52	60
United-States (L.) . .	4,019	3,139	2,536	200,900	157,000	126,798	128	158
Guadeloupe . . . . .	551	507	519	28,000	25,000	25,949	109	106
Jamaica . . . . .	1,345	1,345	1,333	67,000	67,000	66,646	100	101
Mexico . . . . .	4,718	5,161	4,433	236,000	258,000	221,655	91	106
Peru . . . . .	8,819	8,868	8,690	400,000	443,400	434,506	99	101
Puerto Rico . . . . .	16,314	19,849	14,439	815,400	992,423	721,935	82	113
Dominican Republic .	9,414	9,579	7,749	471,000	478,931	387,455	98	121
Total America . . .	118,582	136,671	164,803	5,684,300	6,831,315	8,240,063	87	72
ASIA.								
Formosa . . . . .	18,541	21,805	14,940	927,000	1,090,249	746,981	85	124
India . . . . .	92,991	86,913	67,769	4,650,000	4,345,600	3,388,414	107	137
Japan . . . . .	1,764	2,072	1,932	88,000	103,586	96,620	85	91
Java . . . . .	29,763	57,320	59,818	1,490,000	2,900,000	2,990,857	52	50
Philippine Is. . . . .	23,590	20,944	17,906	1,180,000	1,050,000	895,282	113	132
Total Asia . . . . .	166,649	189,054	162,365	8,335,000	9,489,435	8,118,154	88	103
AFRICA.								
Egypt . . . . .	2,800	3,250	2,210	140,000	162,474	110,476	86	127
Mauritius . . . . .	5,379	3,616	4,952	269,000	180,806	247,577	149	109
Reunion . . . . .	1,102	946	1,071	55,000	47,312	53,552	116	103
Union of South Africa	7,848	6,519	5,910	392,000	325,900	295,498	120	133
Total Africa . . . .	17,129	14,331	14,143	856,000	716,492	707,103	120	121
OCEANIA.								
Australia . . . . .	12,119	13,148	11,365	605,900	657,400	568,236	92	107
Hawaii . . . . .	19,540	19,961	18,113	977,000	998,000	905,655	98	108
Fiji Is. . . . .	3,069	1,786	1,967	153,400	89,300	98,325	172	156
Total Oceania . . .	34,728	34,895	31,445	1,736,300	1,744,700	1,572,216	100	110
GENERAL TOTALS . .	337,088	374,951	372,756	16,611,600	18,781,942	19,637,536	90	90

1) Approximate data.

*United States* : The area under sugar-cane in Louisiana is estimated at 217,000 acres compared with 184,000 in 1931 and 151,000, the average of 1926-30 ; percentages : 117.9 and 143.3. Production of cane is estimated at 68,020,000 centals (3,401,000 short tons) against 54,340,000 (2,717,000) in 1931 and 43,624,000 (2,181,000), the average for 1926-30 ; percentages : 125.2 and 155.9.



Production of maple sugar and maple syrup calculated in its equivalent of sugar (1 gallon of syrup = 8 lb. of sugar), in 1932 was as follows in centals of sugar :

	1932	1931	Average 1926, 1930	% 1932 1931=100	Average = 100
Maple sugar . . . . .	16.0	16.1	25.6	99.1	62.6
Maple syrup (sugar equivalent) .	191.5	174.9	262.4	109.5	73.0

The number of trees tapped was 12,033,000 against 12,079,000 in 1931 and 13,113,000 in 1930.

*Sugar-beet.*

COUNTRIES	AREA					PRODUCTION									
	1932	1931	Average 1926 to 1930	% 1932		1932	1931	Average 1926 to 1930	1932	1931	Average 1926 to 1930	% 1932			
				1931	Average							1931	Average		
														1931	Average
1,000 acres			= 100	= 100	1,000 centals			1,000 short tons			= 100	= 100			
Germany	669	941	1,102	71.1	60.7	173,628	243,370	257,569	8,681	12,168	12,868	71.3	67.5		
Austria . .	106	105	69	100.0	152.1	21,226	21,554	15,844	1,061	1,078	792	98.5	134.0		
Belgium . .	132	128	155	102.9	85.4	33,002	32,310	39,372	1,650	1,615	1,969	102.1	83.8		
Bulgaria . .	30	30	46	100.0	63.9	5,291	4,189	6,001	265	209	300	126.3	88.2		
Denmark . .	93	75	91	125.3	103.0	27,337	17,262	23,537	1,367	863	1,172	158.4	116.1		
Spain . . .	201	277	166	72.7	121.7	39,548	62,969	38,361	1,977	3,148	1,918	62.8	103.1		
Finland . .	6	5	5	117.3	110.9	1,036	794	834	52	40	42	130.6	124.2		
France . . .	618	621	633	99.5	97.6	154,857	136,592	145,298	7,743	6,829	7,265	113.4	106.6		
Engl. a. W.	255	233	220	109.3	115.7	44,800	37,094	40,045	2,240	1,855	2,002	120.8	111.9		
Scotland . .	1	1	4	69.7	18.0	114	114	482	6	6	24	100.0	23.7		
Hungary . .	113	134	172	84.0	65.5	19,366	21,301	32,654	968	1,065	1,633	90.9	59.3		
Italy 1) . .	207	283	253	73.3	82.0	54,991	54,524	57,967	2,750	2,726	2,898	100.9	94.9		
Netherlands	99	93	153	106.9	64.7	34,613	22,690	45,961	1,731	1,134	2,298	152.5	75.3		
Poland . . .	286	367	517	77.9	55.4	52,250	60,875	96,718	2,612	3,044	4,836	85.6	54.0		
*Rumania . .	45	50	158	91.6	28.8	...	6,828	23,229	...	341	1,176	...	...		
Sweden . . .	99	87	75	113.4	131.0	29,366	19,317	18,577	1,468	966	929	152.0	158.1		
Switzerland.	3	3	4	109.4	96.8	1,036	838	1,056	52	42	53	123.7	98.1		
Czechoslov.	361	461	637	78.2	56.6	81,098	115,541	146,730	4,055	5,777	7,336	70.2	55.3		
*U.S.S.R. . .	3,123	3,401	1,868	91.8	167.2	...	...	208,073	...	...	10,404	...	...		
Canada . . .	45	50	48	90.0	94.4	9,000	9,080	8,736	450	454	437	99.1	103.0		
United St. .	768	713	701	107.7	109.6	179,820	158,060	154,364	8,991	7,903	7,718	113.8	116.5		
TOTALS . .	4,092	4,607	5,051	88.9	81.0	962,379	1,018,474	1,129,906	48,119	50,922	56,495	94.5	85.2		

\* Countries not included in the totals. — 1) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey.

*Guadeloupe* : Part of the crop, especially that of the small growers has not yet been gathered in owing to the impossibility of a remunerative price for the canes. Due to the long campaign, work, particularly cutting of ratoons, was very backward and could not be completed in time.

*Mexico* : Crop condition in November was normal and a generally satisfactory yield was expected.

*St. Lucia, British West Indies* : Heavy precipitation in November checked planting but condition of the standing crop continued to be good save in a few areas where the effects of the dry weather in August were still felt.

*Trinidad* : Relatively dry weather continued in November. More moisture was required particularly in the central southern districts.

*Formosa* : Growing conditions of the cane planted since last summer were fairly good on 1 January. Planting was almost finished.

Growing conditions of the cane now being cut were good. Slight damage from insects and disease was reported.

*India* : After a period of dry weather rainfall in the United Provinces varied from light to moderate in the latter half of December. In the Punjab the weather was dry until the week ended on the 26th when light rains fell, followed by general rains at the end of the month. Sugar-cane was damaged by tela and chitri in Sialkot. In Bihar and Orissa crop condition at the end of December was good.

*Egypt* : Cutting of the cane and transport to factories began on 19 December. Unit-yield is slightly above average. Crop condition on 1 January was 103 against 104 on 1 December and 103 on 1 January 1932. Area to be cut is 50,100 acres against 67,800 in 1931-32 and 54,700 on the average of the five years ending 1930-31 ; percentages 73.9 and 91.6. Production is forecast at 35,101,000 centals (1,755,000 short tons) against 46,903,000 (2,345,000) in 1931-32 and the mean of 37,470,000 (1,873,000) ; percentages 74.8 and 93.7.

*Union of South Africa* : Condition of the cane in November was 9 % below normal. Weather was fairly favourable over the sugar belt but more rains were needed in some districts.

## VINES

As was expected in our note of last month, Italy has raised its estimate of wine production but, as will be seen from the details subsequently to be mentioned, the correction, which refers to the two years 1932 and 1931, is, at least in part, consequential on the latest cadastral revisions, which modify the estimates of area under vineyards. Greece has, on the other hand, reduced its first estimate by 15 % and the partial information available for Portugal confirms the forecast of a small, if not very small, crop. On the basis of present general information and statistical data it is possible to estimate the total for the northern hemisphere in 1932 as follows.

It should be noted that the figure taken for France is that of total production, estimated for this year at 1,000 million Imperial gallons (1,320 million American gallons) — with an approximation of  $\frac{1}{100}$  — and not the total of crop declarations; on the other hand the figures for production in Spain, Bulgaria, Greece, Hungary and Luxemburg are those of wine production calculated approximately as nine-tenths of must production as given in the statistics of these countries. Finally, account must be taken of the fact that the cadastral correction made in Italy, affecting the production statistics of 1932 and 1931, slightly falsifies the figures for preceding years, it being impossible to apply the necessary correction to these years.

With the statistical corrections possible, the table shows that wine production in Europe in 1932 is a rather low average and that in the northern hemisphere as a whole a good average.

The distribution of the crop amongst the various producing countries is, however, such that movement within Europe will be relatively difficult.

*Production of wine — Northern Hemisphere.*

	1932	1931	Average 1926 1930	Average 1921 1925	Average 1921 1930	Average 1909 1914
(million Imperial gallons)						
<i>Europe</i>						
Western countries (France, Italy, Spain, Portugal) .	2 552-2 596	2,644 1	2,597 9	2,910 3	2,754 1	2,501 1
Danubian countries (Yugo- slavia, Bulgaria, Rumania Hungary) .	374-396	409 2	301 4	297 0	299 2	(123 2)
Greece . . . . .	57 2	37 4	50 6	39 6	46 2	74 8
Central European countries (Germany, Switzerland, Lux- emburg, Austria Czecho- slovakia) . . . . .	77 0 880	110 0	70 4	74 8	72 6	59 4
<i>Total Europe</i>	3 056 3 146	3 200 7	3 020 3	3 321 7	3,172 1	2,758 5
<i>Northern Africa total</i>	444 4	367 4	270 6	204 6	237 6	182 6
TOTAL, NORTHERN HEMI- SPHERE . . . . .	<u>3,498-3,586</u>	<u>3,568 1</u>	<u>3,290 9</u>	<u>3,526 3</u>	<u>3,409 7</u>	<u>2,941 1</u>

(million American gallons)

<i>Europe</i>						
Western countries (France, Italy, Spain, Portugal) .	3 064 3 117	3 175 3	3 119 9	3 195 0	3 307 4	3 003 6
Danubian countries (Yugo- slavia Bulgaria, Rumania, Hungary) .	119-476	491 4	361 0	356 6	359 3	147 9
Greece . . . . .	68 7	44 0	60 8	47 6	55 5	89 8
Central European countries (Germany Switzerland, Lux- emburg, Austria Czecho- slovakia) . . . . .	92 5-1060	132 1	84 5	89 8	87 2	71 3
<i>Total Europe</i> .	3 672-3 778	3,843 7	3 627 1	3,989 0	3,809 4	3,312 6
<i>Northern Africa total</i>	533 6	441 2	324 9	245 7	285 3	219 3
TOTAL, NORTHERN HEMI- SPHERE . . . . .	<u>4,200-4,306</u>	<u>4,284 9</u>	<u>3 952 0</u>	<u>4,234 7</u>	<u>4,094 7</u>	<u>3 531.9</u>

The total available supplies on the French market, taking into account those of Algeria and Tunisia, are sufficient to assure internal consumption, the quantity legally immobilized in the hands of growers has also been greatly increased, attaining 66 (79) million gallons for France and Algeria together; the various measures restricting the entry of foreign wines have been maintained save in the case of a few countries, including Portugal, and imports of foreign wines, which seem in fact in the first two months of the season, September and October, to have been much larger than in the previous year, remained in December at the same level as

in the two preceding months, that is, considerably below the figure attained in December 1931 so that the total import in the first quarter of 1932-33 is appreciably below that in the same period of 1931-32.

In almost all the other producing countries, large or small, supplies, in some cases large, as in Italy, exceed requirements for internal consumption, reduced by the crisis, despite the moderate level of prices; the fact that supplies in some important viticultural countries such as Italy and Spain include a relatively high proportion of low-quality wines, unsuited for sale or saleable only after mixture with a certain quantity of higher-quality wines, reduces to some extent for these countries the volume of net supplies. Thus it appears that Spain, as well as Portugal, where production has been small, may be able to market its supplies internally as usual though the viticultural law recently enforced is still somewhat hesitant and does not seem to have any very distinct possibilities of favouring crop movement in the current season.

### Vines.

COUNTRIES	AREA						PRODUCTION								
	1932	1931	Average 1926 to 1930	% 1932		Average 1926 to 1930	1932	1931	Average 1926 to 1930	% 1932					
				1931	Average					1931	Average				
												= 100	= 100	= 100	= 100
1,000 acres						1,000 Imperial gallons			1,000 Amer. gallons						
*Germany	205	204	201	100.3	101.6	21,294	62,463	40,928	25,572	75,012	49,151	...	149.5		
Austria .	1) 70	1) 73	1) 80	95.4	87.6	30,473	14,244	36,595	2) 69,318	2) 57,068	2) 42,041	69.9	164.9		
Bulgaria .	222	224	199	99.2	111.7	2) 57,722	2) 47,520	2) 35,007	2) 503,881	2) 577,948	2) 577,948	96.9	84.5		
Spain .	1) 3,526	1) 3,526	1) 3,460	100.0	101.9	2) 406,453	2) 419,583	2) 481,258	1,258,351	1,517,870	1,338,508	82.9	94.0		
France 1)	3,682	3,559	3,441	103.4	107.0	1,047,831	1,263,933	1,114,578	77,441	51,391	67,591	150.7	114.6		
Greece . .	1) 352	1) 315	1) 283	111.5	124.5	64,485	42,793	56,283	1,220,408	959,781	1,040,470	127.2	117.3		
Italy 4) .	2,542	2,491	2,051	102.0	124.0	1,016,236	799,211	866,401	2,258	1,367	47.6	78.6			
Luxemburg	7,323	7,332	8,572	99.9	85.4	895	1,880	1,139	12,783	12,041	7,406	106.2	172.6		
Czechoslov.	1) 3	1) 3	1) 3	99.0	78.4	10,644	10,027	6,167	—	—	—	—	—		
*Syria a. Leb	130	130	108	100.0	120.9	—	—	—	—	—	—	—	—		
Algeria 3)	1) 870	1) 771	1) 564	112.8	154.3	402,883	348,808	248,229	483,826	418,887	298,101	115.5	162.3		
Tunis . .	1) 99	1) 87	1) 72	113.5	137.3	35,350	15,545	19,255	42,452	18,668	23,123	227.4	183.6		
TOTALS . .	—	—	—	—	—	3,063,793	2,979,773	2,842,561	3,679,340	3,578,440	3,413,660	102.8	107.8		

\*) Countries not included in the totals. — u) Unmixed crop. — m) Mixed crop. — 1) Area bearing. — 2) Must. — 3) Declared crop. — 4) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey.

The volume of Italian output is on the other hand such that despite the relatively low stocks of old crop remaining it does not seem possible for them to be entirely absorbed; the steps taken by the Government and the very low prices should have checked a diminution in internal consumption but such a diminution appears in fact to have occurred, though it is impossible to evaluate exactly, and not to be compensated by the slight increase in exports, particularly to Switzerland.

In the Danubian countries, Greece and Central Europe, with the exception of Switzerland, supplies are also distinctly in excess of the requirements of internal consumption, which has been severely restricted by the general economic crisis ; there must in fact almost everywhere be added to the generally very large stocks remaining from previous crops and greatly increased by last year's heavy production a crop above normal.

On the whole European consumption appears insufficient to absorb this year's production even though the latter is of normal dimensions. The demand from extra-European countries tends rather to decrease and, as it is in any case small, movement of supplies in 1932-33 would seem, on every hypothesis, to be in all probability very difficult and likely to leave a relatively heavy carryover.

This statistical situation seems to be weighing very heavily on trade. Apart from temporary and rather restricted liveliness following the vintage in some countries and often due to rather exceptional circumstances such as lack of transport in Italy, business is everywhere very quiet. Prices remain generally firm at the very-low level reached at the beginning of the season.

*Austria* : At the beginning of January condition of wines was 2 6 against 1 8 on 1 December 1932 and 2 4 on 1 January 1932.

*Spain* : December was rather rainy in the north centre and east and favoured maturing of the wood. Seasonal operations proceeded normally. Quality of the last crop's wines is rather poor in the north and in the chief viticultural regions of the centre.

Trade is principally in old-crop wines, of which prices are firm and no large quantities remain. The market is generally quiet, the application of the new viticultural statute continuing to cause some uncertainty amongst growers and traders. Exports to France are still very limited though in November they were double the amount of those in the same month of 1931

*France* : The crop declarations received by the office of direct taxation, of which the total has already been published in the Crop Report, confirm in every respect the estimates of the Institute. If the results are considered with reference to each of the important viticultural districts there appears to have been a very mediocre crop in Bas-Languedoc, Roussillon and the Garonne valley, where it is 30-35 % below that of a good average year like the previous year ; these two regions however, in a normal year supply the trade with two-thirds of total bought from the home vineyards and over half of the quantity consumed on the national market. In Bordelais and Charentes the deficit is less important, being about 20-25 % with respect to a good year ; the crop in the former area is a little less, by only 6 % than that of last year, which was a poor average. In every district quality is on the whole rather poor and in many cases even mediocre.

In the other vine regions of some importance the south-east (Var and Bouches-du-Rhône), Côtes du Rhône, Beaujolais, Charolais, Burgundy, Val de Loire, west-central Basse-Loire and neighbouring departments) the crop is good, often even very good and sometimes attains the very high figures of 1927 and 1929. This very

wide zone does not, however, supply more than 10-15 % of the total necessary for the trade to meet the needs of national consumption and, apart from the two departments of the south-east, produces especially high-class wines. Quality appears in general fairly good in the various vineyards especially in Burgundy and throughout the central east.

In eastern Champagne, Lorraine, Alsace and even Jura yields are average and quality generally fairly good.

It should be noted that in practice the figure of declarations does not correspond to the total production, the relatively small quantity not declared being also very variable and larger in bad than in good years. As regards the area of vines in bearing for which no declaration has been made the comparative study of the data for previous years allows an estimate to be made at about 110 million Imperial gallons (130 million American gallons), so that the total production of France is 1,100 (1,300) million gallons.

Stocks in the hands of growers at the end of the season were smaller than supposed, being scarcely 95 (114) million gallons, thus exceeding those of last year by only 11 (13) million and remaining inferior to the total surplus from the seasons 1928-29 and 1929-30 by 22 (26) to 44 (52) millions gallons. It should be noted that the quantities remaining in growers' hands owing to the law of 4 July 1931 are minimum, being only 11,098,000 (13,319,000) gallons for France and 4,395,000 (5,386,000) for Algeria; the total is thus scarcely 1.5 % of the quantity normally placed on the market.

Since the growers have placed only a relatively small proportion of their supplies on the market the small volume of stocks remaining at the end of the season seems to indicate that non-commercial consumption on holdings is 405 (486) gallons, fairly near that of 1929-30 and probably capable of absorbing 30 % of initial supplies, an exceptionally high proportion, since hitherto this percentage has never exceeded 28.5 and in the last three seasons, which were, however, of a different character, fluctuated between 26 % and 27 %. The extent of commercial consumption in the last season seems to be connected with the lowness of wine prices on the internal market and perhaps also with the relatively high proportion of wines of poor quality and of difficult marketability; the development of this consumption appears however to be a more general phenomenon merely accentuated this year and to be connected also with the growth of national resources due to the development of Algerian production.

Franco-Algerian supplies in growers' hands at the beginning of the season amounted therefore to nearly 1,560 (1,875) million gallons, of which 66 (79) millions must remain legally immobilized; this immobilized quantity is probably almost exactly balanced by the quantity imported from Tunisia and foreign countries, so that the supplies available appear quite adequate to meet the requirements of consumption, which should be between 1,470 (1,770) and 1,540 (1,850) million gallons. It should, however, be noted that the French crop this year includes a relatively large quantity of defective wines, hardly fit for sale and which will probably be absorbed, distillation, vinegar and non-commercial consumption.

In the first months of the viticultural season business was small; the quantities removed from growers' cellars were relatively small since the trade restricted its demand; commercial consumption seems to show a slight fall; the quota of Tunisian wines admitted free was already exhausted a month ago and imports of foreign wines, which were much larger than last year, in the first two months of the season, when they showed an increase of about 12 %, were considerably reduced in December with respect to the same month of 1931 so that imports in the first quarter of the 1932-33 season were appreciably less than in the corresponding period of 1931-32; the quantity of Algerian wines entering France is also larger. Prices are very firm with a rising tendency.

The months of November and December were rainy and mild throughout the country. The excess of moisture hindered work in the vineyards in the whole of the southern region, where the delay was rather considerable at the end of this period, especially as regards manuring and pruning; at the end of December fine, dry weather again set in permitting work to be actively re-commenced. In the other viticultural regions the weather, on the contrary, rather favoured work in the vineyards

*Italy* : November and the first half of December were generally rainy with variable temperatures, especially in the north and centre, where work was somewhat hindered but was renewed in the latter part of December with good weather, in several districts plantings appear to be smaller due to the market situation. In the southern areas the weather was drier so that work was carried on normally, in Apulia and Sicily the need for moisture began to be felt toward the end of December but rains fell at the end of the first week of January

The correction in the crop estimate makes a very heavy decrease in production apparent but as last year's figure has also been corrected the relative increase with respect to 1931 is only slightly reduced, the corrections have been made on the basis of the new cadastral survey and show that in 1931 the area of vines under ordinary cultivation was 498,000 acres, exactly 27.6 %, above that previously estimated while the figure for area planted in intercalary crops undergoes a reduction of 1,057,000 acres or 12.6 %. The most important cadastral corrections are in Piedmont, where the area under intercalary crops is 395,000 acres or 75 % less and the area under ordinary crops is 346,000 acres or 215 % greater, in Tuscany, where the corrections are respectively -18 % and + 60 %, Campania, where they are -10 % and + 63 %, and Emilia, where the area under intercalary crops is 280,000 acres or 14 % less, that under ordinary crops being also reduced

On the whole the corrections show for 1931 an increase of about 4 % in vine area though wine production is 9.3 % greater. It should be noted that the figures for production of grapes in 1931 have undergone the following changes: production of vines under ordinary cultivation 290 %, the corresponding increase in the figure of area being 27.6 %, while production of vines under intercalary cultivation has undergone a reduction of 6.1 %, corresponding to a reduction of 12.6 % for area. The correction of the figure of production in 1931 is thus in part due to cadastral revisions and in part to corrections in unit-yields. It follows that the figures for 1931 and 1932, established on a new statistical basis, are not comparable with those of previous years and in particular that the real increase of production in 1932 in relation to the average is probably considerably smaller than that resulting from a comparison of the statistical estimates, about 66 million Imperial gallons (79 million American gallons), it would appear, should be attributed to the statistical correction. This year's production would thus be a good average

Activity on the various wine markets slackened somewhat at the end of December and at the beginning of January. Internal distribution was active due to the provisional reductions in transport rates, further reduced rates have been fixed for January. Exports, especially to Switzerland, slackened. Prices are fairly well sustained for good qualities, which are still in fair demand, though in the south they have begun to fail; prices of low quality wines remain very low

*Portugal* : According to information from a private source, the viticultural commission of Douro has estimated the production of wines of the port type in this region in 1932 at about 8,645,000 Imperial gallons (10,320,000 American gallons) whereas it was about 13,870,000 (16,660,000) in 1931 (respectively 71.458 and 114.636

*pipas* of 550 litres); stocks of the old crop remaining on 15 November 1932 were 7,431,000 Imperial gallons (8,924,000 American gallons); there was exported, from 1 November 1931 to 15 November 1932, about 12,878,000 Imperial gallons (14,672,000 American gallons) of Douro port (106,438 *pipas*); assuming that shipments are maintained at nearly the same volume during the current season and deducting the normal quantity which should be used to strengthen old weak wines, there would remain at the end of the season 1932-33, 9.7-12.1 million Imperial gallons (11.6-14.5 million American gallons (8-10,000 *pipas*).

Although the production of Douro port represents only about 9 % of the Portuguese production the figures indicated confirm the crop deficit for the year. In any case, this type of wine supplies the Portuguese export trade to the extent of 60 % and for this reason the statistical data of the amount of total supplies and their probable marketing during the 1932-33 season, are of great importance.

This season's production of wine in almost all districts shows a somewhat lower alcohol content due to the rains during vintage

*Palestine* Vines are in leaf in many areas, which is rather detrimental to the future development of the vines

*Algeria* Field work, which was temporarily checked by rainfall at the end of November and at the middle of December, has actively recovered and was fairly well advanced at the end of December especially as regards pruning. The wood has matured well this year. The vine situation is therefore at the moment good

As regards the production of last autumn though the crop declarations reveal a quantity considerably above the recent official estimates published last November, this fact should be attributed to the relatively considerable extension of the area in production shown by these declarations, the average yield per acre for the whole of Algeria is, in fact, not very high: 463 Imperial gallons (556 American gallons) against 454 (545) in 1931; 445 (535) in 1930; 507 (609) in 1929, 552 (663) in 1928, 329 (396) in 1927, 365 (438) in 1926 and 543 (652) in 1925. The increase in the area in production has been particularly large in the department of Oran, which has over one half of the Algerian vineyards, reaching 6.5 % compared with last year whereas it was only 8 % in the department of Algiers and 5 % in that of Constantine, the vineyards in production of Oran have consequently doubled in area since 1925 whereas in the same seven years the relative increase of the Algerian vineyards did not quite attain 50 %. The most notable phenomenon, dating from last year, is that this extension of the Algerian vineyards is in general due essentially to the new plantations made by farmers who previously did not grow vines: while, last year, about 2,000 new growers made crop declarations, there are this year nearly 3,000 new ones so that the total number of growers making declarations has increased by one-half in the last two years whereas it apparently remained practically stationary in previous years; on the basis of previous statistics, about, 125,000 acres have been planted by new growers during the years 1928 and 1929. It should be remarked that these new plantations made by farmers who had not previously planted vines do not appear in the statistics from 1924 to 1929, in fact, only about 117,000 acres were planted in these five years whereas, from 1927 to 1932, a new area of 335,000 acres entered into production. In 1929-30 an increase was noted for the first time of nearly 74,000 acres in the total area corresponding to the new plantations which will enter into production in 1933. The law of 4 July 1931, which rigorously limits new plantations of vines, should have the effect of practically completely checking the extension of the Algerian vineyards, the area of which should therefore remain at under 1 million acres.





Quality is rather good. Due to poor demand and very low prices part of the olives will not be harvested, especially in the department of Constantine.

*Tunis* : Weather conditions during December favoured the growth of olives and picking, which was in progress at the beginning of January. The preliminary estimate of production has not been modified.

The total number of olive trees has slightly increased from 16,370,000 at the beginning of 1932 to 16,513,000 at the beginning of this year (relative increase : 0.9 %) ; the increase on the average number for the period 1926-1927 to 1930-1931 (16,278,000) is 1.4 %. The number of olive trees bearing has, on the contrary, decreased very slightly by 0.2 % from 11,474,000 to 11,457,000, it remains, however, 2 % above the average number for the preceding quinquennium (11,228,000).

## COTTON

*U S S R* Up to 15 December the Government had acquired 24 0 million centals of unginned cotton, 75.5 % of the amount planned.

*Argentina* Despite the locust invasion in the North it is expected that area sown to cotton this year will be greater than that of last year

*United States* Production of cottonseed is estimated at 113,180,000 centals (5,659,000 short tons) against 152,040,000 (7,602,000) in 1931 and 131,824,000 (6,591,000), the average of 1926-1930, percentages. 74.4 and 85.9

### Cotton.

COUNTRIES	AREA						PRODUCTION OF LINT							
	1932/33	1931/32	Average 1926/27 to 1930/31	% 1932/33		Average 1926/27 to 1930/31	1932/33	1931/32	Average 1926/27 to 1930/31	1932/33	1931/32	Average 1926/27 to 1930/31	% 1932/33	
				1931/ 1932	Aver age								1931/ 1932	Aver age
1,000 acres				1,000 centals				1,000 bales of 478 lb.						
Bulgaria	20	13	12	151.0	163.2	40	23	16	8	5	3	169.2	245.5	
Spain	20	14	22	138.6	88.7	19	16	21	4	3	4	117.7	90.8	
Greece	71	46	42	155.7	168.8	76	65	73	16	14	15	115.9	103.4	
Italy	3	4.1	9	78.3	37.4	5	7.2	18	1	1.2	4	67.9	24.6	
* U S S R	5,787	5,346	2,503	108.2	231.2	...	8,812	5,695	..	1,843	1,191	..	..	
U S A	37,589	40,693	44,690	92.4	84.1	60,835	81,719	70,907	12,727	17,096	14,834	74.4	85.8	
Mexico	156	319	465	48.8	33.5	416	989	1,186	87	207	248	42.0	35.0	
China	3) 5,631	4,803	4,806	117.2	117.1	3) 14,433	8,529	10,183	3) 3,019	1,784	2,130	169.2	141.7	
Korea	393	472	493	83.3	79.8	606	483	683	127	101	143	125.7	88.8	
India	*) 20,779	*) 22,358	*) 23,708	92.9	87.6	*) 16,932	*) 16,372	*) 21,088	*) 3,542	*) 3,425	*) 4,412	103.4	80.3	
Syria & Leb	24	75	51	32.5	47.9	25	81	47	5	17	10	31.0	54.1	
Algeria	6)	5	14	6.8	2.2	1	6	28	7)	1	6	15.4	3.6	
Egypt	1,135	1,747	1,861	65.0	61.0	4,158	6,153	7,649	870	1,287	1,600	67.6	54.4	
Entrea	5	7	6	71.4	80.0	7	8	6	2	2	1	89.2	124.1	
* Uganda	1,070	866	641	123.6	166.9	...	780	634	...	163	133	...	...	
* A E Sudan	330	367	299	90.0	110.4	..	985	593	...	203	124	...	...	
TOTALS	65,826	70,556	76,179	93.3	86.4	97,553	114,451	111,905	20,408	23,943	23,410	85.2	87.2	

\* Countries not included in the totals. — 1) Average 1926/27, 1927/28, 1929/30 and 1930/31. — 2) Average 1929/30 and 1930/31. — 3) Preliminary estimate — 4) Estimate of the third report. — 5) First estimate — 6) Area under 500 acres. — 7) Production under 500 bales.

The quantity of cotton, not including linters, ginned from the 1932-33 crop to the close of business on 12 December was 12,086,000 running bales (counting round bales as half bales), against 15,354,000 in 1931, 13,259,000 in 1930, 13,457,000 in 1929, 13,144,000 in 1928 and 12,073,000 in 1927.

*India* : In the Central Provinces December weather was clear and cool. In the Punjab the dry spell was broken by general rain at the end of the month. Cotton was damaged by bollworm in the district of Lyallpur. According to a telegram of 5 January from the Punjab Department of Agriculture, cotton picking had nearly been finished ; yields were generally below normal to normal. In Madras rainfall was heavy to moderate at the beginning of December but fell [towards the end of the month.

*French West Africa* : Last season's crop appears to have been very [mediocre in comparison] with those of previous years, both because yields were not very good and because [the crisis has led the natives to reduce their crops ; it must also be noted that the proportion of cotton not brought to the markets and retained by the natives for their own use is larger than usual due to the low prices

Production of the Ivory Coast for 1931-32 is 22,000 centals of ginned cotton (4,600 bales) a decrease of 28.6 % on that of last year (30,900 centals, 6,500 bales) and of 39.5 % on the average of the five years ending 1929-30, 36,400 centals, 7,600 bales.

In Dahomey the crop suffered greatly from drought , in Haute-Volta and the Sudan the crop also [appears to have been rather small. These four colonies together produce a little less than nine-tenths of the total for French West Africa

*Egypt* : Cotton ginned up to the end of December, in bales of 478 lb. net weight :

Varieties	1932	1931	1930	1929	1928
Sakellaridis . . . . .	158,700	170,700	224,000	310,700	367,500
Other varieties above :					
1 3/8 inches . . . . .	75,800	719,600	739,600	764,700	824,500
1 1/4 inches . . . . .	52,900				
1 1/8 inches . . . . .	400,100				
Total . . . . .	687,500	890,300	963,600	1,075,400	1,192,000
Scarto (linters) . . . . .	16,000	23,200	22,600	24,400	32,600

*Uganda* : The favourable weather conditions mentioned in the last report were maintained and the condition of the crop towards the end of November was in most parts slightly above the average. As compared with the past few seasons the crop is relatively free from pests and diseases, blackarm disease in particular being a negligible factor in the present crop. In general it was considered that drier conditions from the beginning of December onwards would benefit the crop.

## FLAX

Since flax for fibre is one of the industrial crops demanding a large labour force it was [already some decades prior to the War showing a tendency to displacement toward cheap labour countries, that is, from west to east. In recent years there has been a renewal and an accentuation of this tendency. The data

of area devoted to the crop in the last decade in all European countries except the U. S. S. R. on the one hand and in the U. S. S. R. on the other — that is, in practically all the producing regions — are as follows.

*Area sown to flax for fibre (thousand acres).*

	Europe (21 countries)	U.S.S.R.	Total
Mean 1923-1927 . . . . .	1,129	2,975	4,104
1928 . . . . .	1,218	3,371	4,589
1929 . . . . .	1,194	4,030	5,224
1930 . . . . .	1,107	4,016	5,123
1931 . . . . .	848	5,780	6,628
1932 . . . . .	692	6,202	6,894

For a more exact interpretation of the above data it is necessary to add in the case of the U. S. S. R. the data referring only to dolgunets, which is grown chiefly for fibre, excluding kudriash, which is grown exclusively for seed; in addition, the mean comprises only the three years 1925 to 1927. The area in Europe in 1932 has been calculated approximately; since however, data for 1932 are still lacking for only five countries, which together in the preceding year had only 37,000 acres, the estimate is not likely to differ from the final figure.

From these data it follows in the first place that the development and extension of the area under flax in Europe follows a course contrary to that in the U. S. S. R. Taking the mean as base it will be seen that in Europe, after a certain increase in 1928, the area gradually diminished in 1929 and 1930, fell sharply in 1931 and was in 1932 only six-tenths of the mean. In the U. S. S. R., on the other hand, the area shows a continuous increase and last year was over double the mean.

Given the importance the Soviet production, the total area in Europe and the U. S. S. R. was in 1932 two-thirds greater than the mean.

A more detailed analysis of the data on area cultivated in Europe shows that four groups of countries can be distinguished. The first group comprises six countries (Germany, Belgium, France, Northern Ireland, the Netherlands and Czechoslovakia) which are the most important in Western and Central Europe. The second group comprises four countries (Estonia, Latvia, Lithuania and Poland) which are the most important producers of Eastern Europe. The third group is composed of two countries (Rumania and Hungary) in which the area under flax has in recent years, in opposition to what has occurred in the two preceding groups, shown an increase. In the fourth group are all the other countries, in which the area under flax has remained practically stationary (Yugoslavia) or has little importance (Austria, Bulgaria, Spain, Great Britain, the Irish Free State, Italy and Sweden).

Assembling the data in the above four groups, the following changes are seen in the last ten years.

*Area under flax in the different groups of European countries*  
(thousand acres)

	I	II	III	IV	Total Europe
Mean 1923-1927 . . . . .	294	687	54	94	1,129
1928 . . . . .	304	771	54	89	1,218
1929 . . . . .	339	719	54	82	1,194
1930 . . . . .	259	699	82	67	1,107
1931 . . . . .	126	539	114	69	848
1932 . . . . .	84	447	91	69	691

With regard to the decline in area under flax in each of the four groups it is useful to keep in mind the fluctuations in flax prices. Some indication of this is given by the following quotations for Riga Z. K. on the London market in gold francs per quintal :

1927 . . . . .	232	1930 . . . . .	127
1928 . . . . .	242	1931 . . . . .	81
1929 . . . . .	187	1932 (January-July) . . . . .	79

In general the prices in a given year influence the area sown to flax in the following year. Comparison of the prices from 1927 onward with the total areas sown in Europe shows that the recovery of prices in 1927 and 1928 resulted in a certain increase in area sown in Europe while the sharp fall of prices in 1929 and the following years resulted in a rapid shrinkage of area.

An examination of the data of area in each of the four groups of flax-growing countries shows at once that each group has its own distinguishing character. In fact, the *first group*, composed of countries very sensitive to market fluctuations, after registering a fairly large increase in area in 1928 and 1929, began to diminish its area rapidly and in 1932 had arrived at a level only 29 % of the average. For certain countries (the Netherlands and Northern Ireland) the proportion has fallen to 15 % and 13 %.

The *second group*, which, both by the special importance of the crop in the various countries and by the structure of their agriculture, is much less sensitive than the preceding group to market fluctuations, also reacted to the rise in prices and subsequently reduced the area under flax when they fell ; the reduction has, however, been much less than in the first group and the area in 1932 is about two-thirds of the quinquennial mean for 1923-27. It should be noted that Poland has shown greater resistance, having reduced the area by only 12 % with respect to the above mentioned mean. The *third group* (Hungary and Rumania) maintained the area in 1928 and 1929 and recorded a considerable increase in the two following years. In 1932 there was a decrease but it should not be forgotten that only the areas devoted exclusively to flax have been taken into account and that in Hungary flax is also cultivated and to an increasing extent in mixtures with other crops and the production from these mixed areas has considerably increased. Similarly, in the *fourth group* the area, after declining in 1928-30, became practically stabilized.

For the production of flax fibre in 1932 data for only eleven countries (Germany, Austria, Belgium, Bulgaria, Estonia, France, Italy, Latvia, Lithuania, the Netherlands and Czechoslovakia) are available; in 1931 the area under flax in these countries was 425,000 acres, half the flax area of Europe, and produced 1,630,000 centals, 55 % of the European total (excluding, of course, the U. S. S. R.) In 1932 these countries had an area of about 314,000 acres under flax, 45 % of the total, and produced about 1,100,000 centals. With respect to the 1931 area that of 1932 represents 73 % while the production is 68 %. For the exact determination of the total production in 1932 the data for some important producers, including Poland, Yugoslavia and some others of less importance, are lacking.

Calculating on the basis of the above indicated data, however, it, may be estimated that European production in 1932 was about 2.2 million centals a very low figure, whether in relation to the 1923-27 average or to the four succeeding years.

### Flax (Fibre).

COUNTRIES	AREA					PRODUCTION											
	1932	1931	Aver. 1926 to 1930	% 1932		1932	1931	Aver. 1926 to 1930	1932	1931	Aver. 1926 to 1930	% 1932					
				1931	Average							1931	Average				
														= 100	= 100	= 100	= 100
1,000 acres			1,000 centals			1,000 pounds											
*Germany .	11	16	38	68.1	29.6	1)	79	1)	117	—	1)	7 937	1)	11,684	—	67.9	—
Austria †)	8	8	2)	10	95.9	74.4	106	107	2)	146	10,582	10,701	2)	14,592	98.9	72.5	72.5
Belgium .	21	36	59	57.9	35.5	149	254	542	14,887	25,370	54,180	58.7	27.5	27.5	27.5	27.5	27.5
Bulgaria .	1	2	1	56.2	160.6	2	2	2	154	176	152	87.6	101.6	101.6	101.6	101.6	101.6
Estonia .	36	45	83	80.0	43.8	74	131	208	7,443	13,056	20,826	57.0	35.7	35.7	35.7	35.7	35.7
*Finland 3)	11	10	11	112.5	101.5	...	...	28	...	...	2,845	...	...	...	...	...	...
France .	23	26	79	90.8	29.5	149	138	589	14,941	13,788	58,875	108.4	25.4	25.4	25.4	25.4	25.4
*N.Ireland .	6	7	31	81.9	19.5	...	31	131	...	3,091	13,058	...	...	...	...	...	...
*Hungary .	20	47	13	41.8	150.6	...	133	65	...	13,264	6,518	...	...	...	...	...	...
Italy 4)	10	10	16	95.7	60.7	54	48	56	5,397	4,837	5,616	111.6	96.1	96.1	96.1	96.1	96.1
Latvia .	78	104	150	75.5	52.3	209	287	440	20,877	28,660	43,955	72.8	47.5	47.5	47.5	47.5	47.5
Lithuania 3)	99	139	212	71.5	46.7	271	466	748	27,070	46,628	74,800	58.1	36.2	36.2	36.2	36.2	36.2
Netherlands	5	16	37	29.9	13.1	31	99	252	3,086	9,918	25,153	31.1	12.3	12.3	12.3	12.3	12.3
*Poland .	232	252	281	91.9	82.6	...	756	1,191	...	75,611	19,097	...	...	...	...	...	...
*Rumania .	71	69	47	104.1	152.8	...	158	52	...	15,756	5,198	...	...	...	...	...	...
Czechoslov.	16	23	46	71.4	35.4	68	75	206	6,814	7,469	20,608	91.2	33.1	33.1	33.1	33.1	33.1
*U.S.S.F 5).	6,202	5,779	3,457	107.3	179.4	...	12,026	7,410	...	1,202,626	740,958	...	...	...	...	...	...
*Egypt †)	2	3	3	86.9	78.3	...	13	21	...	1,320	2,092	...	...	...	...	...	...
TOTALS ..	297	409	693	72.7	42.7	1,029	1,522	3,072	102,874	152,107	307,031	67.8	33.6	33.6	33.6	33.6	33.6

\*) Countries not included in the totals. — †) Production expressed in terms of dried flax straw. — 1) Private estimate. — 2) Average 1927 to 1930 — 3) Flax and hemp. — 4) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey — 5) Doigunetz quality.

Flax prices from August onward, after falling to a very low level, began to rise slowly but continuously and show a slight recovery.

The above data together allow certain conclusions to be drawn and forecasts to be made. In the first place it may be said that 1932 was an exceptionally difficult year for flax in Europe and that the area fell to the lowest level recorded in the last ten years. This reduction was caused on the one hand by the general crisis, accentuated in the last two or three years, and on the other to the continued increase in the flax area of the U. S. S. R., with the accompanying development of exports from that country, which, from an average of 1,056,000 centals in the quinquennium 1923-27 and 940,000 centals in 1928 attained almost

*Linseed.*

COUNTRIES	AREA					†) PRODUCTION									
	1932	1931	Aver. 1926 to 1930	% 1932 — 1931/33		1932	1931	Aver. 1926 to 1930	1932	1931	Aver. 1926 to 1930	% 1932 — 1931/33			
	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	1932/33	1931/32	1926/27 to 1930/31	1931 — 1932	Aver. age — 100	1932/33	1931/32	1926/27 to 1930/31	1932/33	1931/32	1926/27 to 1930/31	1931 — 1932	Aver. age — 100	1931/32 — 100	1932/33 — 100
	1,000 acres					1,000 centals					1,000 bushels				
*Germany .	11	16	38	68.1	29.6	**) 50	**) 73	—	**) 89	**) 130	—	68.5	—	—	—
Austria . .	5	5	7	95.8	70.3	20	19	24	36	33	43	109.4	83.9	—	—
Belgium . .	21	36	59	57.9	35.5	93	182	279	166	326	498	51.0	33.4	—	—
Bulgaria . .	1	2	1	56.2	160.6	6	11	2	11	19	3	57.6	321.8	—	—
Estonia . .	36	45	83	80.0	43.8	83	141	223	149	253	398	58.9	37.3	—	—
France . . .	23	26	79	90.8	29.5	122	130	411	218	233	735	93.6	29.6	—	—
Italy, 1) . .	18	18	28	97.1	62.9	105	103	175	188	184	312	102.2	60.8	—	—
Latvia . . .	78	104	150	75.5	52.3	205	279	411	366	499	735	73.4	49.9	—	—
Lithuania 2)	99	139	212	71.5	46.7	315	562	810	563	1,003	1,446	56.1	38.1	—	—
*Rumania .	71	69	47	104.1	152.8	...	293	156	...	523	279	...	...	—	—
Czechoslov.	16	23	46	71.4	35.4	51	56	164	91	100	293	90.8	31.1	—	—
*U.S.S.R. . .	3) 7,347	7,574	4,528	—	—	...	...	13,135	...	...	23,456	...	...	—	—
Canada . . .	454	627	511	72.4	88.8	1,370	1,380	2,422	2,446	2,465	4,325	99.2	56.6	—	—
United St. .	2,087	2,416	3,040	86.4	68.7	6,631	6,607	11,458	11,841	11,798	20,461	100.4	57.9	—	—
India . . .	3,241	3,008	3,224	107.7	100.5	9,206	8,445	8,355	16,440	15,080	14,920	109.0	110.2	—	—
Egypt . . .	2	3	3	86.9	78.3	16	20	23	28	36	42	78.0	67.6	—	—
*French Mor.	61	89	50	68.6	122.4	...	522	252	...	932	450	...	...	—	—
Argentina . .	4) 7,401	4) 8,640	4) 7,178	85.7	103.1	29,763	49,878	41,461	53,147	89,068	74,037	59.7	71.8	—	—
*Uruguay . .	487	443	270	110.0	180.1	...	2,709	1,593	...	4,837	2,845	...	...	—	—
TOTALS . . .	13,482	15,092	14,621	89.4	92.2	47,986	67,813	66,218	85,690	121,097	118,248	70.8	72.5	—	—

\*) Countries not included in the totals. — \*\*) Unofficial estimate. — †) The two dates given refer to the years in which the harvest took place in the northern and southern hemispheres respectively. — 1) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 2) Flax and hemp. — 3) Total area of "dolgunetz" flax for fibre and flax for seed sown as on 20 June 1932. — 4) Area sown.

1,800,000 centals per annum in the succeeding triennium (1,788,000 in 1929, 1,726,000 in 1930 and 1,759,000 in 1931). In the first nine months of 1932 (January-September) exports attained a figure of 1,334,000 centals against 1,171,000 centals in the corresponding period of 1931.

It is difficult to predict the development of Soviet flax exports in the near future but sight should not be lost of the fact that, judging from the figures of

the Plan for 1933, the area under flax for fibre in the U. S. S. R. will not undergo any considerable change with respect to that sown in 1932. On the other hand the slight recovery in flax prices registered in the latter months of 1932 may stimulate, if not increase, the flax area in European countries, preventing them at least from lowering still more the minimum attained in 1932.

IVAN GRINENCO.

*Argentina* : Threshing has confirmed the fact that yields are generally low throughout the country. Indications as to quality of the linseed are rather unsatisfactory save in the south of Buenos Aires province.

*India* : In the latter half of December light rains and some hailstorms occurred in Bihar and Orissa. In the United Provinces rainfall was light to moderate in the latter half of December. In the Central Provinces the weather was clear and cool.

The first estimate of the area under linseed in India is 2,483,000 acres compared with 2,377,000 in 1931-32 and 2,462,000, the average for the period 1926-27 to 1930-31; percentages : 104.5 and 100.9.

## HEMP

COUNTRIES	AREA					PRODUCTION				
	1932	1931	Average 1926 to 1930	% 1932		1932	1931	Average 1926 to 1930	% 1932	
				1931	Aver- age				1931	Aver- age
1,000 acres			= 100	= 100	1,000 pounds			= 100	= 100	

### Fibre.

Germany 1) . . .	1	1	2	107.3	35.3	—	—	—	—	—
Austria . . . .	1	1	1	91.6	95.4	2) 1,631	2) 1,728	2) 3) 1,775	94.4	91.9
Bulgaria . . . .	11	9	9	120.2	117.1	3,968	4,189	2,992	94.7	132.6
France . . . . .	6	9	12	61.4	47.6	5,143	9,240	10,283	55.7	50.0
Hungary 4) . . .	17	16	22	107.9	75.0	...	8,763	2,557	...	...
Italy 5) . . . . .	134	141	223	94.9	59.8	122,441	118,175	207,682	103.6	59.0
Poland . . . . .	79	76	76	103.2	104.2	...	31,773	44,585	...	...
Rumania . . . .	118	120	100	97.9	117.8	...	60,048	38,397	...	...
Czechoslovakia .	19	21	24	93.5	79.9	10,059	9,189	14,270	109.5	70.5
U.S.S.R. . . . .	2,063	2,282	2,193	90.4	94.1	...	...	693,660	...	...
Syria and Lebanon	7	6	6	112.4	102.9	3,086	3,530	3,784	87.4	81.6

### Hempseed.

Austria . . . . .	6)	6)	1	81.6	56.6	154	156	229	99.0	67.3
Bulgaria . . . .	11	9	9	120.2	117.1	4,189	3,668	2,397	114.2	174.8
France . . . . .	6	9	12	61.4	47.6	554	1,616	3,283	34.3	16.9
Hungary 4) . . .	17	16	22	107.9	75.0	...	5,493	8,925	...	...
Italy 5) . . . . .	—	—	—	—	—	5,368	3,582	7) 10,875	149.8	49.4
Poland . . . . .	79	76	76	103.2	104.2	...	47,102	45,597	...	...
Rumania . . . .	118	120	100	97.9	117.8	...	50,079	19,379	...	...
Czechoslovakia .	19	21	24	93.5	79.9	6,476	6,097	10,907	106.2	59.4
U.S.S.R. . . . .	2,063	2,282	2,193	90.4	94.1	...	...	1,006,907	...	...

1) Hemp and other textile plants. — 2) Production expressed in terms of air-dried stalks. — 3) Average 1927-30. — 4) Unmixed crops. — 5) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 6) Area of less than 500 acres. — 7) Year 1930.



# HOPS

COUNTRIES	AREA					PRODUCTION				
	1932	1931	Average 1926 to 1930	% 1932		1932	1931	Average 1926 to 1930	% 1932	
				1931	Aver- age				1931	Aver- age
1,000 acres			= 100	= 100	1,000 pounds			= 100	= 100	
Germany . . . . .	20	25	35	78.2	56.6	10,929	17,152	27,220	63.7	40.1
Belgium . . . . .	1	2	3	69.0	42.7	884	1,148	4,588	77.0	19.3
France . . . . .	5	6	10	77.6	43.7	2,110	1,178	9,802	179.1	21.5
Engl. and Wales . .	17	20	23	84.7	71.0	21,056	18,900	32,278	111.2	65.2
*Hungary . . . . .	x) 1	1	x) 1	78.2	100.0	...	274	219	...	...
Czechoslovakia . .	24	31	35	79.1	67.8	16,451	27,177	24,911	60.5	66.0
United States . . .	22	21	23	102.8	95.2	24,120	26,410	30,359	91.3	79.4
TOTALS . . .	89	105	129	88.1	72.5	75,550	91,965	129,158	82.5	58.8

\* Country not included in the totals. — 1) Area of less than 500 acres.

# TOBACCO

COUNTRIES	AREA					PRODUCTION				
	1932	1931	Average 1926 to 1930	% 1932		1932	1931	Average 1926 to 1930	% 1932	
				1931	Aver- age				1931	Aver- age
1,000 acres			= 100	= 100	1,000 pounds			= 100	= 100	
*Germany . . . . .	27	26	22	104.5	121.4	...	1) 51,105	45,013	...	...
Belgium . . . . .	7	7	7	94.1	89.6	13,518	14,469	15,026	93.4	90.0
Bulgaria . . . . .	47	77	73	61.3	64.3	31,306	54,784	54,836	57.1	57.1
Spain . . . . .	12	9	7	138.4	186.5	13,228	12,991	7,931	101.8	166.8
Greece . . . . .	153	209	229	73.1	66.5	57,978	95,274	140,189	60.9	41.4
*Hungary . . . . .	57	62	56	91.5	101.3	...	80,404	65,104	...	...
Italy . . . . .	99	103	97	95.8	101.6	95,593	103,031	98,027	92.8	97.5
*Rumania . . . . .	25	40	76	63.6	33.3	...	24,926	45,829	...	...
Czechoslovakia . .	25	22	15	110.4	163.6	33,069	30,495	17,729	108.4	186.5
*U.S.S.R. . . . .	449	450	222	99.7	202.0	...	...	320,968	...	...
United States . .	1,433	2,016	1,847	71.1	77.6	1,033,330	1,604,226	1,413,783	64.4	73.1
Japan . . . . .	84	90	90	92.5	92.6	138,230	155,757	143,198	88.7	96.6
Syria and Lebanon	11	19	8	58.7	143.7	4,255	11,671	5,103	36.5	83.4
Algeria . . . . .	52	57	61	91.5	85.6	39,683	39,863	49,852	99.6	79.6
TOTALS . . . . .	1,923	2,609	2,434	73.7	79.0	1,460,190	2,122,561	1,945,614	68.8	75.0

\* Countries not included in the totals. — 1) Production for sale.

United States : The December estimates of area and production of tobacco in 1932 are as follows :

CLASSIFICATION	Area (ooo acres)			% 1932 — 1931 = 100	Production (ooo lb.)			% 1932 — 1931 = 100
	1932	1931	1930		1932	1931	1930	
Flue-cured . . . . .	627.0	981.0	1,128.0	63.9	362,004	664,967	864,276	54.4
Fire cured . . . . .	162.3	237.0	233.0	68.5	127,679	190,765	166,318	66.9
Air-cured, light . . . . .	464.5	556.0	517.4	83.6	366,947	483,764	376,387	75.8
Air-cured, dark . . . . .	53.1	88.4	78.2	60.1	41,960	75,867	61,025	55.2
Cigar filler . . . . .	71.7	74.9	72.7	95.7	64,831	91,685	73,271	70.7
Cigar binder . . . . .	46.2	67.8	70.1	68.2	62,387	87,117	93,691	71.6
Cigar wrapper . . . . .	6.9	8.7	10.8	80.0	6,825	8,396	11,502	81.6
Miscellaneous . . . . .	1.0	1.7	1.4	57.1	697	1,665	907	37.5
<b>TOTAL . . .</b>	<b>1,432.7</b>	<b>2,015.5</b>	<b>2,111.6</b>	<b>71.1</b>	<b>1,030,330</b>	<b>1,604,226</b>	<b>1,647,377</b>	<b>64.4</b>

Total tobacco production shows a decrease of about 36 % compared with 1931 while the acreage harvested was 29 % less and the yield per acre 9 % less. All types show large decreases, the important flue-cured variety for example, having a production 45 % smaller than in 1931.

In the week ended on 4 January the weather was generally favourable for handling tobacco in all sections.

## OTHER PRODUCTS

### Cacao.

*St. Lucia, British West Indies* : Crop condition in November appeared good but picking was delayed by the heavy rains.

*Trinidad* : Rainfall in November was very small. The eastern districts have had particularly favourable weather and picking was there further advanced. As flowers and young fruits were still sprouting it was believed that the crop from February onward would be much better than last year.

Owing to the low prices and fears of still more unsatisfactory returns for the 1932-1933 crop little or no work has been done in the fields. Energetic measures against witchbroom (*Marasmius perniciosus*) continue, however, to be taken.

*Gold Coast* : Reports from districts up to 25 November indicated a larger crop than in 1931-32 in seven districts (Anyinam, Bekwai, Efiduasi, Huhunya, Kibi, Nsawam and Tafo), a smaller crop in two districts (Dunkwa and Koforidua) and a crop of the same size in seven districts (Asuansi, Poso, Juaso, Oda, Saltpond, Sekondi-Dixcove and Winneba). According to a report from Kumasi the optimistic view of many buyers as to the present crop is possibly not justified. The number of buyers has lessened, leaving more cacao divisible amongst the rest. The crop in this district is estimated to be slightly smaller.

The balance of opinion is still in favour of a crop larger than that of 1931-32, which was 423 million pounds. Comparison with the average of about 432 million pounds for the past five major crops indicates that that of 1932-33 is rather below normal. In other words the previous estimate of 437 million pounds is possibly too high. A similar conclusion may be drawn from the evidence on the size of beans this year. There is a general belief that beans this year are unusually small and definite statements to this effect have been received from Accra, Nsawam, Oda and Winneba. Clearly

this is a factor to be taken into account in a crop estimate. A reduction of only 1 % in size of bean would mean 45 million pounds less weight of crop.

In view of district reports and of rumours and statements concerning lessened size of bean it is advisable to revise the estimate hitherto accepted for the major crop of 1932-33. For the present a forecast of 430 million pounds is adopted, that is, a figure between that of 1931-32 (423 million) and that of the past five major crops (432 million).

## Tea.

*India* : According to a report dated 22 December received from the Department of Commercial Intelligence and Statistics seasonable weather [with some rain was experienced during November in North India and the crop came in well. Latterly there were signs of the closing of [the season Statistics to the end of November recorded an increase of 28 3/4 million lbs. as compared with [the outturn to the same date of last year.

In South India the weather was seasonably cold with some heavy showers during the second half of November.

The crop was about normal for November and prospects were fair The outturn was 11.26 % ahead of that to the same date of last year.

## Coffee.

*Guadeloupe* : Picking was carried out in good conditions.

*Mexico* Unit-yields in the principal areas of production were generally considered good save in Vera Cruz, where quality was inferior to that of previous years

*Surinam* Crop condition was in general good during the third quarter of 1932 but, due to the drought which set in as early as September, the bushes suffered here and there and ripening of the berries was retarded

## Groundnuts.

*United States* The December figures of area and production of groundnuts in 1932 are as follows The total production includes groundnuts gathered as well as those grazed or otherwise utilized

	1932	1931	Average 1926-1930	% 1931 = 100	% 1932 Average = 100
<i>Area</i> (ooo acres)					
Groundnuts (total) . . . . .	2,421	2,145	1,779	112.9	136.1
Groundnuts (gathered) . . . .	1,603	1,419	1,138	113.0	140.9
<i>Production</i> (thousand centials)					
Groundnuts (total) . . . . .	14,030	15,388	11,974	91.2	117.2
Groundnuts (gathered) . . . .	10,028	10,831	8,110	92.5	123.6

The decreased production in 1932 is due to lower yields as the area was about 13 % larger than in 1931 Virginia, North Carolina and Tennessee, which produce most of the large nuts, had a crop about 15 % less than in 1931 but in the south-eastern States the crop was only 7 % smaller and in the Southwest it was, on the contrary, about 20 % larger

*Mexico* : November was favourable to harvesting. Unit-yields in the principal areas are satisfactory.

*French West Africa* : The crop appears to be good, particularly in Senegal and the Sudan, of which the production represents about four-fifths of the total. In Guinea; however, the crop is relatively very small, having been affected by the excessive humidity, while in Dahomey and the Ivory Coast drought at the beginning of the growing season caused some damage, subsequently deminished, however. Extension of the crop, in certain circles of Haute-Volta is reported.

### Colza, sesame and mustard.

*Austria* : At the beginning of January condition of winter colza was 2.4 against 2.8 on 1 December 1932 and 2.5 on 1 January 1932.

*Rumania* : The area sown to winter colza as on 1 December 1932 was 18,400 acres against 65,200 sown as on 1 December 1931 and 66,000 as on 1 December 1930.

*India* : Hailstorms caused some damage to mustard crops in one or two districts of Bihar and Orissa during December.

The first estimate of the area under rapeseed and mustard is 3,050,000 acres compared with 3,209,000 in 1931-32 and 3,147,000, the average for the period 1926-1927 to 1930-31; percentages: 95.0 and 96.9.

According to the final report the area of sesame in 1932-33 was 5,697,000 acres against 5,335,000 in 1931-32 and 5,375,000, the average for the preceding five seasons; percentages: 106.8 and 106.0. Production is estimated at 10,931,000 centals (547,000 short tons) against 9,542,000 (477,000) in 1931-32 and the average of 10,102,000 (505,000); percentages: 114.6 and 108.2.

### Sericulture.

COUNTRIES	QUANTITIES OF EGGS PREPARED FOR INCUBATION					PRODUCTION OF COCOONS				
	1932	1931	Average 1926 to 1930	% 1932		1932	1931	Average 1926 to 1930	% 1932	
				1931	Aver- age				1931	Aver- age
1,000 ounces					1,000 pounds					
Bulgaria . . . . .	28	22	43	122.9	64.0	2,866	2,446	4,741	117.2	60.5
*Spain . . . . .	13	...	27	...	47.2	1,199	1,160	1,938	103.3	61.9
France . . . . .	18	20	55	91.0	33.2	2,162	2,197	6,088	98.4	35.5
Italy . . . . .	582	701	982	83.0	59.3	70,548	75,968	111,278	92.9	63.4
Korea . . . . . s)	227	219	196	103.5	115.8	29,273	28,662	22,437	102.1	130.5
Japan . . . . . f s)	2,751	2,806	2,615	98.0	105.2	383,441	435,419	407,819	88.1	94.0
{ f)	3,136	3,158	3,534	99.3	88.7	356,811	367,114	385,838	97.2	92.5
Syria and Lebanon	60	79	99	76.0	60.8	4,575	6,085	7,315	75.2	62.5
TOTALS . . .	6,802	7,005	7,524	97.1	90.5	849,676	917,891	945,516	92.6	89.9

\* Country not included in the totals. — s) Spring cocoons. — f) Summer-autumn cocoons.

# FODDER CROPS

*Germany:* The final data for area and production of the principal fodder crops are as follows:

	1932	1931	Average 1926-30	% 1931 = 100	% 1932 Average = 100
<i>Area (thousand acres).</i>					
Mangels . . . . .	2,013	1,933	1,787	104.1	112.7
Turnips . . . . .	671	656 (1)	636	102.3	105.5
Clover . . . . .	4,320	4,275	4,424	101.0	97.6
Alfalfa . . . . .	776	756	700	102.6	110.8
Irrigated meadows . . . . .	1,006	996	946	101.0	106.3
Unirrigated meadows . . . . .	12,578	12,603	12,638	99.8	99.5

## *Production.*

Mangels	(ooo centals)	760,295	657,545	549,909	115.6	138.3
	(ooo sh. tons)	38,014	32,877	27,495		
Turnips	(ooo centals)	205,367	184,010 (1)	160,016	111.6	128.3
	(ooo sh. tons)	10,268	9,200 (1)	8,001		
Clover	(ooo centals)	212,027	206,428	194,182	102.7	109.2
	(ooo sh. tons)	10,601	10,321	9,709		
Alfalfa	(ooo centals)	46,228	46,920	37,935	98.5	121.9
	(ooo sh. tons)	2,311	2,346	1,897		
Irrigated meadows	(ooo centals)	45,264	47,610	41,737	95.1	108.5
	(ooo sh. tons)	2,263	2,380	2,087		
Unirrigated meadows	(ooo centals)	513,483	515,079	464,149	99.7	110.6
	(ooo sh. tons)	25,674	25,754	23,207		

(1) 1927-30.

*Austria:* At the beginning of January the crop conditions of the principal fodder crops were: red clover: 2.5 (against 2.5 on 1 December 1932 and 2.7 on 1 January 1932); alfalfa: 2.7 (2.8, 2.7); mixed clover: 2.6 (2.4, 2.6); permanent meadows: 2.7 (3.2, 2.6) and pastures: 2.6 (2.9, 2.8).

*Denmark:* Production of the principal fodder crops in 1932; compared with that for preceding years, is as follows:

	1932	1931	Average 1926-30	% 1931 = 100	% 1932 Average = 100
Mangolds { (million cent.) . . . . .	225	173	178	130	127
	(million sh. tons) . . . . .	11.3	8.6		
Kohlrabi { (million cent.) . . . . .	300	250	254	120	118
	(million sh. tons) . . . . .	15.0	12.5		
Turnips, etc. { (million cent.) . . . . .	41	37	50	110	81
	(million sh. tons) . . . . .	2.1	1.9		
Fieldhay { (million cent.) . . . . .	36	37	30	98	123
	(million sh. tons) . . . . .	1.8	1.5		
Meadow hay { (million cent.) . . . . .	13	17	14	76	93
	(million sh. tons) . . . . .	0.6	0.7		

*Irish Free State:* The first half of December was genial and dry but later there were heavy rains. On the whole conditions were favourable.

*France* : Weather conditions, characterised by regular and fairly abundant precipitation and mild temperatures since the beginning of November have been very favourable to meadows and pastures.

As may be seen from the following table, fodder production during the past year was abundant, especially that of fodder legumes, with the result that supplies for the winter are on the whole sufficient to meet the reduced needs for the maintenance of livestock on pasture relatively late in the season.

*Area : (ooo acres)*

	1932	1931	Average 1926 to 1930	% 1932 1931=100	aver.=100
Mangolds . . . . .	2,029	1,831	1,961	110.8	103.4
Fodder cabbage . . . . .	583	551	563	105.8	103.5
Swedes and turnips . . . . .	509	487	471	104.6	107.9
<i>Total fodder legumes</i> . . . . .	3,121	2,869	2,995	108.8	104.1
Temporary meadows (clover, alfalfa and sainfoin) . . . . .	7,171	7,169	7,160	100.0	100.1
Graminaceous and mixed graminaceous and leguminous crops . . . . .	1,169	1,194	1,097	97.9	106.5
Annual green fodder 1) . . . . .	1,806	1,799	1,794	100.4	100.7
Permanent meadows 2) . . . . .	13,655	13,690	13,138	99.7	103.9
<i>Total meadows and fodder crops</i> 2) . . . . .	23,801	23,872	23,189	99.8	102.6

*Production :*

	1932		1931		Average 1926-1930		% 1932 1931=100		av.=100
	ooo centals	ooosh. tons	ooo centals	ooosh. tons	ooo centals	ooosh. tons			
Mangolds . . . . .	686,500	34,325	491,386	24,509	544,749	27,237	139.7		126.0
Fodder cabbage . . . . .	151,584	7,579	129,965	6,498	127,612	6,381	116.6		118.8
Swedes and turnips . . . . .	92,193	4,610	82,191	4,109	74,462	3,723	112.2		123.8
<i>Total fodder legumes</i> . . . . .	930,277	46,514	703,542	35,176	746,823	37,341	132.2		124.6
Temporary meadows (clover, alfalfa and sainfoin) . . . . .	272,556	13,628	276,289	13,814	259,312	12,963	98.6		105.1
Graminaceous and mixed graminaceous and leguminous crops . . . . .	37,005	1,850	38,610	1,930	30,564	1,528	95.8		121.1
Annual green fodder 1) . . . . .	298,161	14,908	298,328	14,916	258,943	12,947	99.9		115.1
Permanent meadows 2) . . . . .	435,055	52,138	452,379	22,619	402,085	20,104	96.2		108.2
<i>Total hay and fodder production</i> (2) ; . . . . .	1,042,777	98,652	1,065,606	53,279	950,904	47,542	97.9		109.7

1) Including fodder maize consumed green.

2) Excluding grazed land.

As regards the area under fodder crops there is, on the one hand, an increase in the area of annual crops or those having a short growing period – such as legumes, annual green fodder and temporary meadows –, whereas the crops having a longer growing period – temporary and permanent meadows – show, on the contrary, for the first time since the war, a very slight regression. On the whole, the total area of fodder crops still shows a very slight increase of 0.8 %.

*Great Britain and Northern Ireland* : In December progress was made in the lifting of turnips and reports of yield were favourable. Storing of mangels was completed and the crop was keeping satisfactorily.

*Italy* : All fodder crops progressed well in December. Irrigated fields gave good yields and catch crops an abundant production. On the whole fodder production is expected to be sufficient to cover requirements.

*Canada* : The revised estimates of the areas under fodder crops in 1932 are as follows :

	1932	1931	Average 1926-30	% 1931 = 100	% 1932 Average = 100
	(ooo acres)				
Alfalfa . . . . .	666	557	829	119.5	80.4
Turnips, etc. . . . .	175	151	206	115.8	84.9
Hay and clover . . . . .	8,812	8,532	10,248	103.3	86.0
Fodder maize . . . . .	338	336	453	110.4	74.6
Grain hay . . . . .	1,899	1,800	1,706	105.5	111.3

*United States* : The December estimates of hay seed production in 1932 are as follows :—

	1932	1931	Average 1926/30	% 1931 = 100	% 1932 Average = 100
<i>Area (ooo acres)</i>					
Clover seed (red and Alsike) . . . . .	1,087	850	1,041	127.9	104.4
Lespedeza seed . . . . .	74	73	42	101.4	175.7
Timothy seed . . . . .	442	509	511	86.8	86.5
Alfalfa seed . . . . .	275	361	317	76.2	86.7
Sweet clover seed . . . . .	180	248	257	72.6	70.0

*Production*

Clover seed (red and Alsike)	(ooo centals)	1,013	683	904	148.3	112.0
	(ooo bushels)	1,688	1,138	1,507		
Lespedeza seed	(ooo centals)	73	78	50	94.5	146.9
	(ooo bushels)	294	311	200		
Timothy seed	(ooo centals)	801	921	890	87.0	90.0
	(ooo bushels)	1,781	2,046	1,978		
Alfalfa seed	(ooo centals)	323	503	539	64.1	59.9
	(ooo bushels)	538	839	898		
Sweet clover seed	(ooo centals)	344	503	635	68.4	54.2
	(ooo bushels)	573	838	1,058		

As may be seen from the above table there occurred a notable increase in the production of red and Alsike clover seed in 1932 compared with both 1931 and the average due partly to increased acreage and partly to the favourable season. Lespedeza

seed production shows a slight setback compared with 1931 but still remains at a comparatively high level. For other kinds the figures for 1932 are relatively low compared with both the previous year and the average, especially in the case of alfalfa seed, for which the season was unfavourable.

*Palestine* : Oat and vetch mixture forage shows good growth in the North, but is mostly dead in the South. The second cutting of bersim has been made from the irrigated areas. Dry sown crops in the North show a fair germination. In Southern areas all crop are dead or dying.

*Algeria* : Despite some hoar-frosts and thanks to satisfactory precipitation and temperatures since the end of November pastures have, in general, a good growth, especially in the East, the department of Constantine and in the South, where the animals winter. They will apparently nearly everywhere furnish abundant winter feed.

*Egypt* : Growth of *bersim* is satisfactory. First cutting of early crops is general.

## LIVESTOCK AND DERIVATIVES

### Number of pigs in Germany on 1 December 1932.

The total number of pigs according to the last enumeration of December is smaller than at the same date in the two preceding years and decreased in

#### Numbers of pigs in Germany (1).

CLASSIFICATION BY SEX AND AGE	I Dec 1932	I Sept 1932	I June 1932	I March 1932	I Dec 1931	I Sept 1931	I June 1931	2 March 1931	I Dec. 1930	I Sept. 1930	2 June 1930	I March 1930	2 Dec. 1929
	(1000 head)												
Totals . . . . .	22,813	24,175	21,289	20,633	23,783	25,348	22,529	21,790	23,442	23,423	19,805	18,649	19,944
Sucking pigs under 8 weeks of age . . . .	4,826	6,326	5,501	5,013	5,125	6,804	6,027	5,750	5,469	6,522	5,091	5,012	4,417
Young pigs from 8 weeks to 6 months of age . .	9,870	10,341	9,832	9,976	10,469	10,980	10,351	10,231	10,035	9,809	9,178	8,555	8,693
Pigs from 6 months to 1 year of age . . . . .	5,790	5,434	4,109	3,853	5,775	5,391	4,172	3,939	5,484	5,125	3,842	3,487	4,599
Of which													
Boars for service . .	49	46	46	47	52	51	54	58	61	57	57	54	56
Sows for breeding (total)	485	516	607	549	495	569	693	706	674	812	876	722	663
Sows covered . . . .	(259)	(255)	(374)	(323)	(251)	(276)	(409)	(425)	(369)	(442)	(574)	(455)	(383)
Other swine . . . . .	5,256	4,872	3,456	3,257	5,228	4,771	3,425	3,176	4,749	4,256	2,909	2,712	3,880
Pigs 1 year old and over .	2,327	2,074	1,847	1,791	2,414	2,173	1,979	1,870	2,455	1,967	1,694	1,695	2,235
Of which													
Boars for service . .	62	75	73	67	63	73	71	62	60	61	57	51	50
Sows for breeding (total)	1,383	1,559	1,534	1,425	1,458	1,661	1,663	1,517	1,503	1,467	1,356	1,229	1,179
Sows covered . . . .	(849)	(832)	(938)	(875)	(869)	(902)	(1,021)	(927)	(942)	(861)	(915)	(792)	(775)
Other swine . . . . .	882	440	240	299	893	439	246	291	892	440	280	315	1,006

1) Present territory, excluding the Saar.



1932 as in 1931, from the beginning of September to the beginning of December. The fall in the numbers of young pigs and sucking pigs is particularly accentuated. Pigs of six months to one year as well as those of above one year were more numerous on 1 December 1932 than at the beginning of September in the same year. The number of pigs of six months to one year was also larger at the beginning of December 1932 than at the corresponding date of the preceding year, though to a less extent.

The large supplies of feed, which cannot be otherwise utilized, as well as the difficulties encountered by growers in marketing pork have determined the latter to place a relatively small number of their best slaughter stock on the market.

*Percentage classification of pigs by age.*

	1 December 1932	1 December 1931	1 December 1930	2 December 1929
Sucking pigs under 8 weeks of age . . .	21.1	21.6	23.3	22.1
Young pigs from 8 weeks to 6 months of age . . .	43.3	44.0	42.8	43.6
Pigs from 6 months to 1 year of age . . .	25.4	24.3	23.4	23.1
Pigs 1 year old and over . . . . .	10.2	10.1	10.5	11.2

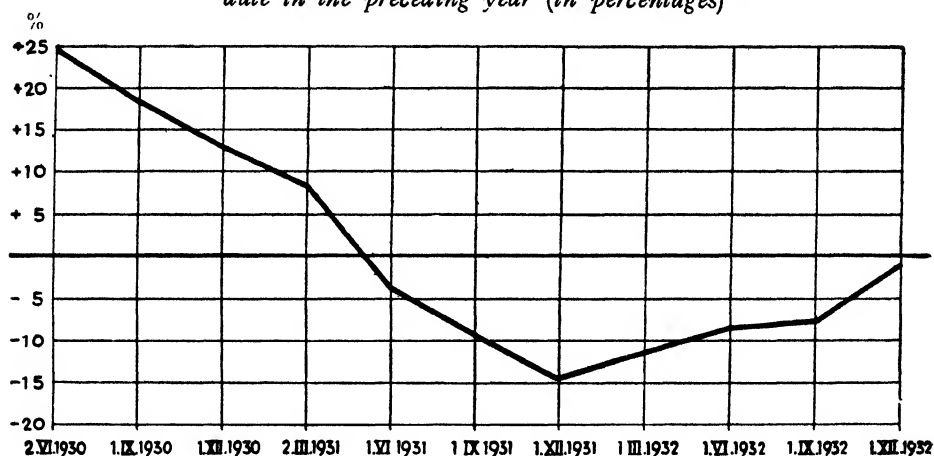
Comparison of the results of the last four December enumerations shows that, contrary to what occurred in preceding years, the proportion of pigs of one year and over to the total did not decrease in 1932, while the proportion of pigs of six months to one year showed a further considerable increase and that of young pigs decreased. If the number of pigs over six months not destined for breeding but for slaughter is examined in the following table, it will be found that the proportion of young pigs up to one year has still further increased and to a greater extent than that of older pigs in the period from 1 December 1931 to 1 December 1932 though in a less measure than in preceding years.

*Percentage classification according to age of pigs over 6 months old  
not destined for reproduction.*

	1 December 1932	1 December 1931	1 December 1930	2 December 1929
Pigs from 6 months to 1 year of age . . .	85.6	85.4	84.2	79.4
Pigs 1 year old and over . . . . .	14.4	14.6	15.8	20.6

Since the number of pigs for slaughter on 1 December 1932 was not less but slightly greater (by 0.3 %) than a year previously, it may be expected that in the year future there will be an adequate demand. Further, it follows from the diminution in the number of sows in farrow by only 1.1 % with respect to the corresponding figure of the preceding year that breeding will not be so severely limited as previously.

*Increase (+) or decrease (—) in number of sows in farrow with respect to the same date in the preceding year (in percentages)*



The facts illustrated in the above diagram furnish by their exceptionally regular development the best basis for appreciating the probable supply in the not too distant future. There is evidently a tendency at the present time toward an intensification of breeding.

It should be noted that in 1932 the number of sows in farrow increased from 1 September to 1 December, the contrary to what happened in 1931.

### Number of pigs in Denmark.

In the following table are given the numbers of pigs as established by a special enumeration on 19 November 1932:

	19-XI-1932	20-VI-1932	15-I-1932	15-VII-1931	15-I-1931	15-VII-1930
Boars of 4 months and over . . . .	28,000	29,000	30,000	31,000	27,000	24,309
Sows of 4 months and over in farrow . .	321,000	336,000	355,000	430,000	385,000	394,615
Sows of 4 months and over not in farrow	163,000	157,000	195,000	192,000	189,000	191,572
Pigs of 4 months and over for fattening.	1,260,000	1,198,000	1,320,000	1,146,000	1,179,000	1,020,148
Young pigs of two months and under 4 months . . . . .	1,659,000	1,688,000	1,932,000	1,864,000	1,769,000	1,619,001
Sucking pigs of 2 months . . . . .	1,395,000	1,478,000	1,655,000	1,781,000	1,632,000	1,670,202
Total . . . . .	4,826,000	4,886,000	5,487,000	5,444,000	5,181,000	4,919,847

The figures of the last two enumerations of 1932 are not strictly comparable since they refer to different dates; there are, however, grounds for believing that in view of the general fall in prices the tendency of farmers to restrict pig-

rearing already noted at the beginning of 1932 (see Crop Report for February 1932) has not yet reached its full development. The number of pigs in November shows a fall on that in April for all categories except pigs of four months and over for fattening, which have increased by 5.2 % and the figure of pigs at the beginning of the 1933 is probably below that of 1932.

### Number of pigs in Czechoslovakia.

The final figures of the pig census carried out on 1 July 1932 and which will henceforward be carried out annually are now available. For some years the pig census has been taken simultaneously with that of other categories on 1 January but there will now be two censuses annually for pigs, thus supplying interesting data enabling the movement of numbers to be followed. According to the estimates now published the total on 1 July 1932 was 3,082,456 against 2,575,921 on 1 January 1932, 2,776,215 on 1 January 1931 and 3,087,830 on 27 May 1930. Comparing the data of 1 July 1932 with those of 27 May 1930 as referring to approximately the same date, it may be seen that for the whole country there is an insignificant fall of 0.2 %. In the various regions the changes have been as follows : Bohemia + 13.8 %, Moravia and Silesia + 1.3 %, Slovakia — 18.5 %, Subcarpathian Russia — 21.3 %.

The pigs enumerated on 1 July 1932 were divided amongst the various groups as follows : boars for reproduction 12,687 ; sows from 6 months to one year old for reproduction (excluding those for fattening) 140,885 ; sows over one year old for reproduction (excluding those for fattening) 311,099 ; other pigs (including sows for fattening), 2,608,785 (of which young pigs up to eight weeks old 770,354, pigs from eight weeks to six months old 1,431,531 and pigs of six months and over 406,900).

For each boar it is calculated that there are 36.3 sows and for each sow 5.7 other pigs.

### The pig crop in the United States.

The following table and comments taken from the December pig crop report published by the United States Department of Agriculture describe the present pig crop situation in the United States :

<i>Pigs saved.</i>				
	Fall (1 June - 1 Dec.) Thousand head	% $\frac{1932}{1931}$	No per litter	Spring (1 Dec. - 1 June) Thousand head
1932 . . . . .	(1) 29,090	104	6.08	49,572
1931 . . . . .	27,869	—	6.09	53,261
<i>Sows farrowed.</i>				
	Fall (1 June - 1 Dec.) Thousand head		Spring (1 Dec. - 1 June) Thousand head	% $\frac{1933}{1932}$
1931 . . . . .	4,579	1932	8,558	—
1932 . . . . .	4,784	1933	(2) 8,709	102

(1) Preliminary. — (2) Number indicated to farrow from breeding intention reports.

The figures show an increase of about 4 % in the total fall pig crop of 1932 over that of 1931. Because of the decrease in the spring pig crop, the total combined fall and spring pig crop of 1932 is 3 % smaller than that of 1931 for the entire country. An increase of 1.8 % is also shown in the number of sows to farrow in the spring of 1933 compared with the spring of 1932.

The number of hogs over six months of age, mostly spring pigs of 1932, on farms on December 1 in the Corn Belt States is indicated to be about 8 % smaller than on December 1 last year.

### Livestock in New Zealand.

Complete statistics of livestock for the season 1931-32 are now available and in the subjoined table the data for the principal categories are compared with those for the preceding nine years.

Years	Number of sheep (including lambs) as at 30 April	Sheep (not including lambs) shorn in season ending in year indicated	Lambs tailed in season ending in year indicated	Number of cattle as at 31 January	Number of dairy cows as at 31 January	Number of pigs as at 31 January	Number of horses as at 31 January
1932 . . . . .	28,692	26,033	14,975	4,072	1,702	513	281
1931 . . . . .	29,793	27,574	14,528	4,081	1,602	476	296
1930 . . . . .	30,841	26,999	14,888	3,770	1,441	488	297
1929 . . . . .	29,051	25,296	13,856	3,446	1,371	557	299
1928 . . . . .	27,134	23,959	13,179	3,274	1,352	587	307
1927 . . . . .	25,649	23,442	12,070	3,258	1,303	520	304
1926 . . . . .	24,905	22,686	11,436	3,452	1,304	473	315
1925 . . . . .	24,548	22,336	11,467	3,504	1,323	440	327
1924 . . . . .	23,776	21,078	11,133	3,563	1,313	414	330
1923 . . . . .	23,081	20,420	10,896	3,481	1,249	401	331

In the last number of the Crop Report details of the various categories of sheep from the point of view of reproduction have already been given and the continued decrease in the total has been noted. The above table shows that the number of sheep shorn has now decreased for the first time in ten years. On the other hand the number of lambs tailed increased in 1931-32, rising to a record figure.

There has been a comparatively slight fall in the total number of cattle from the record of 1931 but the number of dairy cows, which are principally in Auckland, North Auckland, Wellington and Taranaki, attained a new record.

The beginning of a fresh upward swing in the number of pigs was registered while the decline in the horse population continued.

### Current information on livestock and derivatives.

*Belgium* : Health remained good. The economic position of dairy products, pigs and poultry was more favourable but that of horse-rearing distinctly unsatisfactory.

*Irish Free State* : Ample supplies of dry and green fodder are held in reserve for the winter. Milk yields in December were rather above the average for the time of year owing to the genial weather that prevailed.

*France* : November and December were characterized by regular precipitation and mild temperatures. Livestock are in good health. A slight rise in livestock prices occurred at the end of December and the meat market was a little more active. Butter production is stationary.

*Great Britain and Northern Ireland* : Thanks to the mild and rainy weather pastures remained fresh and green in December. In England and Wales rather more cattle than usual were out. In Northern Ireland the mild weather benefited livestock generally and store cattle maintained good condition and health with almost complete freedom from disease; the number of cattle being stalled this season does not apparently differ materially from that in recent years and both home-grown and imported feeds are plentiful; in some areas farmers are feeding a greater proportion of crushed oats than usual to stock and reducing the quantity of maize meal. In Scotland also home-grown grain is cheap and is being used extensively for the feeding of stock; ample supplies of concentrated foods are available, excepting wheat bran, of which the supply is scarcely equal to the demand. In England and Wales winter keep had not been drawn upon to any unusual extent and supplies were ample.

Milk yields were maintained satisfactorily.

*Hungary* : On 14 January health was generally satisfactory

*Argentina* : Health is good to excellent. The wool clip has given good results

*United States* : On 4 January livestock were in good condition with satisfactory pasturage in most of the country east of the Great Plains except Florida where the ranges needed rain. Livestock were favoured in most northern parts of the great western grazing districts but in the southwest the severe cold caused hardship and the ranges varied greatly

*French West Africa* : Thanks to the rains which fell in sufficient amount, though sometimes rather late, the condition of pasture was generally satisfactory, save in Guinea, where small stock continued to suffer, and in Senegal, where disease has appeared in the Casamanie district.

*Algeria* : The livestock situation is good, especially as regards sheep. Autumn lambing took place under excellent conditions. According to a private source reproducing the official statistics, numbers show a decided increase compared with last year, indicating the beginning of a recovery in Algerian livestock.

	1932	1931	1930
Cattle . . . . .	893,188	872,238	938,095
Sheep . . . . .	5,269,038	4,670,000	7,168,050

The market has been fairly active during the last few months and quotations, which decreased by one-half compared with those of two years ago, have risen by 10 % to 25 %.

*Union of South Africa* : Except along the southern and eastern coastal belt of the Union and in the eastern Cape Province, the rainfall in November was irregular and generally insufficient to break the prolonged drought in many parts of the Union.

In the Cape northwest the critical conditions were practically unrelieved ; veld was bare and water for stock a serious problem ; the lamb crop was a failure and heavy losses of stock have been suffered. Similar critical conditions prevailed in Griqualand West and Bechuanaland. Very much more rain was required in the northern provinces and in the highveld of Natal before the drought could be considered broken. Conditions in the northern Transvaal were particularly serious ; dams were empty, springs were failing and many losses of cattle had been suffered. The rains that have fallen have been accompanied by destructive hailstorms that have resulted in deaths of livestock.

*New Zealand* : Butter production in the first three months of 1932-33 (August-October) showed an increase of 19.8 % over that in the corresponding period of 1931-32. Every year since 1925 has seen a stimulation of butter production for the first three months of the season.

As regards cheese greater fluctuations are shown from year to year in the first quarter's figures. For the current season the figure is well in excess of that in the first quarter of 1931-32, being 13.5 % greater.

The total output of butterfat products for the quarter exceeded that for the corresponding period of last season by 17.6 %.

## TRADE

COUNTRIES	NOVEMBER				FOUR MONTHS (August 1-November 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1932	1931	1932	1931	1932	1931	1932	1931	1931-32	1931-32
<b>Wheat. — Thousand centals (1 cental = 100 lb.)</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	412	739	0	0	866	2,621	0	0	5,688	0
Hungary . . . . .	86	2,015	0	0	1,407	5,346	0	0	7,912	0
Lithuania . . . . .	0	0	0	0	0	2	0	0	20	0
Poland . . . . .	15	35	79	46	60	196	212	119	1,598	346
Rumania . . . . .	0	3,411	0	2	24	18,096	4	2	21,202	7
U. S. S. R. . . . .	2,826	3,607	0	0	8,393	34,930	1,382	0	39,423	1,515
Yugoslavia . . . . .	73	1,056	0	0	311	5,611	0	0	8,796	0
Canada . . . . .	16,383	16,471	4	4	67,596	43,575	24	35	109,685	75
United States . . . . .	2,482	5,712	825	626	8,248	23,219	7,048	3,214	52,805	7,361
Argentina . . . . .	2,275	3,494	—	—	8,309	14,077	—	—	81,435	—
Chile . . . . .	...	...	...	...	1) 4	1) 0	1) 90	1) 0	9	0
Turkey . . . . .	22	97	0	0	37	201	0	0	913	0
Algeria . . . . .	...	...	...	...	2) 2,011	2) 756	2) 90	2) 300	4,837	1,462
Tunis . . . . .	...	...	...	...	1) 1,684	1) 1,250	1) 79	1) 104	5,337	401
Australia . . . . .	3,355	2,454	0	0	10,785	12,110	0	0	73,793	0
<i>Importing Countries:</i>										
Germany . . . . .	1,790	1,592	1,504	1,479	8,386	5,148	7,110	5,463	7,313	21,006
Austria . . . . .	0	0	536	860	0	0	1,691	2,127	0	6,418
Belgium . . . . .	271	375	1,750	2,617	818	1,841	8,199	11,777	3,587	31,478
Denmark . . . . .	0	0	419	1,431	13	9	2,643	4,531	9	8,719
Spain . . . . .	0	0	212	33	0	0	3,433	33	0	3,049
Estonia . . . . .	0	0	0	13	0	0	0	121	0	256
Irish Free State . . . . .	4	0	511	269	4	0	2,383	2,520	13	6,369
Finland . . . . .	0	0	123	119	0	0	377	174	0	428
France . . . . .	7	0	1,865	3,243	24	4	11,967	17,727	9	53,123
Gr. Brit. and N. Irel. . . . .	35	31	9,403	12,626	134	161	40,850	60,248	1,206	137,664
Greece . . . . .	0	0	1,049	1,127	0	0	4,028	4,828	0	14,116
Italy . . . . .	0	0	913	842	13	18	2,908	2,542	18	22,567
Latvia . . . . .	0	0	0	46	2	0	15	216	0	575
Norway . . . . .	0	0	280	538	0	0	979	1,184	0	3,294
Netherlands . . . . .	161	2	1,257	1,493	395	26	5,503	6,356	110	17,919
Portugal . . . . .	—	—	49	20	—	—	212	406	—	1,393
Sweden . . . . .	2	0	139	531	9	0	1,160	1,197	9	4,054
Switzerland . . . . .	0	0	1,316	1,312	11	0	4,493	5,170	18	12,683
Czechoslovakia . . . . .	0	0	11	1,517	2	2	403	5,086	4	13,199
India . . . . .	7	13	0	0	18	134	0	179	183	179
Japan . . . . .	—	—	851	778	—	—	2,698	3,351	—	17,070
Syria and Lebanon . . . . .	46	66	13	0	181	340	57	0	511	328
Egypt . . . . .	0	0	0	71	0	2	0	106	2	1,034
Union of South Africa . . . . .	...	...	...	...	1) 0	1) 0	1) 119	1) 388	2	258
New Zealand . . . . .	...	...	...	...	1) 0	1) 0	1) 366	1) 15	0	258
<b>Totals</b> . . . . .	<b>30,252</b>	<b>41,170</b>	<b>23,109</b>	<b>31,643</b>	<b>119,745</b>	<b>169,675</b>	<b>105,523</b>	<b>139,519</b>	<b>426,447</b>	<b>389,340</b>
<b>Rye. — Thousand centals (1 cental = 100 lb.)</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	2	101	0	0	46	752	0	0	990	0
Hungary . . . . .	79	225	0	0	375	573	0	0	1,486	0
Lithuania . . . . .	0	0	0	0	2	0	0	2	9	2
Poland . . . . .	864	134	40	22	2,641	877	79	51	2,513	123
Rumania . . . . .	0	309	0	0	9	1,257	0	0	1,676	0
U. S. S. R. . . . .	624	4,863	—	—	2,560	13,316	—	—	23,642	—
Canada . . . . .	282	417	0	0	1,415	807	0	0	5,066	0
United States . . . . .	0	9	—	—	15	24	—	—	622	—
Argentina . . . . .	22	106	—	—	141	348	—	—	4,769	—
Turkey . . . . .	31	46	0	0	146	212	0	0	690	0
Algeria . . . . .	...	...	...	...	2) 9	2) 4	2) 0	2) 0	31	0
<i>Importing Countries:</i>										
Germany . . . . .	280	362	586	569	1,435	1,400	3,142	1,351	2,046	12,103
Austria . . . . .	0	0	11	251	0	0	106	520	0	1,728
Belgium . . . . .	20	51	227	185	132	196	851	1,008	639	2,709
Denmark . . . . .	0	0	534	494	0	0	2,674	2,167	0	4,731
Estonia . . . . .	0	0	0	7	0	0	0	7	0	13
Finland . . . . .	0	0	0	75	0	0	657	273	0	1,202
France . . . . .	0	0	2	231	0	0	220	624	0	1,737
Italy . . . . .	0	0	26	15	0	0	106	44	0	157
Latvia . . . . .	0	0	0	7	0	0	0	46	0	99
Norway . . . . .	0	0	408	478	0	0	1,193	1,376	—	3,415
Netherlands . . . . .	13	11	245	134	31	148	1,482	1,684	331	4,200
Sweden . . . . .	0	0	11	170	0	0	240	386	26	1,345
Switzerland . . . . .	0	0	51	9	0	0	130	40	0	108
Czechoslovakia . . . . .	26	0	2	911	31	2	86	2,709	0	5,124
<b>Totals</b> . . . . .	<b>2,243</b>	<b>6,634</b>	<b>2,172</b>	<b>3,551</b>	<b>8,988</b>	<b>19,916</b>	<b>10,966</b>	<b>12,288</b>	<b>44,543</b>	<b>38,796</b>

1) 2) See notes page 64.



COUNTRIES	NOVEMBER				FOUR MONTHS (August 1-November 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1932	1931	1932	1931	1932	1931	1932	1931	1931-32	1931-32
<b>Wheat flour. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Germany . . . . .	115	13	2	11	218	20	20	60	64	229
Belgium . . . . .	7	7	7	9	20	26	35	31	73	51
Bulgaria . . . . .	4	62	0	0	40	265	0	0	752	0
Spain . . . . .	0	4	0	0	2	9	0	0	18	0
France . . . . .	406	432	53	13	1,219	2,438	183	104	4,533	262
Hungary . . . . .	86	454	0	0	425	1,010	0	0	2,130	0
Italy . . . . .	280	220	22	29	1,592	688	73	97	2,218	287
Latvia . . . . .	0	0	0	0	0	0	0	0	26	0
Lithuania . . . . .	0	2	0	0	7	9	0	0	2	0
Poland . . . . .	31	117	0	0	90	282	0	0	511	4
Rumania . . . . .	2	163	0	0	13	553	0	0	855	0
Yugoslavia . . . . .	9	15	0	0	26	26	0	0	104	0
Canada . . . . .	1,131	935	2	2	3,569	4,142	7	15	10,551	40
United States . . . . .	948	1,682	0	0	3,225	5,864	0	0	15,091	0
Argentina . . . . .	130	128	—	—	320	606	—	—	1,545	—
Chile . . . . .	—	—	—	—	4	7	0	0	29	0
India . . . . .	33	84	0	0	157	320	0	0	636	0
Turkey . . . . .	0	0	0	0	0	0	0	4	11	4
Japan . . . . .	584	123	2	11	1,768	800	7	51	3,470	106
Algeria . . . . .	—	—	—	—	99	20	7	7	157	57
Tunisia . . . . .	—	—	—	—	44	44	2	2	146	20
Australia . . . . .	800	1,005	0	0	3,682	5,437	0	0	13,995	0
<i>Importing Countries:</i>										
Austria . . . . .	0	0	24	170	0	4	220	348	7	1,279
Denmark . . . . .	2	0	82	157	7	4	262	540	13	1,290
Estonia . . . . .	0	0	0	2	0	9	0	11	11	15
Irish Free State . . . . .	0	2	187	320	0	11	875	1,351	26	4,045
Finland . . . . .	0	0	126	273	0	0	461	880	0	1,596
Gr. Brit. and N. Irei. . . . .	414	496	739	1,093	1,693	1,784	2,718	4,224	5,628	11,224
Greece . . . . .	0	0	4	11	0	0	11	35	0	66
Norway . . . . .	0	0	115	198	2	2	357	575	11	1,358
Netherlands . . . . .	2	7	71	75	13	33	282	337	71	723
Portugal . . . . .	—	—	62	9	—	—	121	77	—	201
Sweden . . . . .	0	0	0	4	0	0	4	15	0	37
Czechoslovakia . . . . .	0	0	4	77	2	4	128	390	9	1,182
Ceylon . . . . .	—	—	51	33	—	—	148	139	—	401
Java and Madura . . . . .	—	—	—	—	—	—	234	306	—	1,138
Indo-China . . . . .	—	—	29	33	—	—	123	141	—	388
Syria and Lebanon . . . . .	4	11	35	18	20	55	148	99	93	397
Egypt . . . . .	0	0	13	463	0	0	117	1,177	0	2,430
Union of South Africa . . . . .	—	—	—	—	0	0	2	7	2	15
New Zealand . . . . .	—	—	—	—	0	0	64	55	4	238
<b>Totals . . . . .</b>	<b>4,990</b>	<b>5,966</b>	<b>1,630</b>	<b>3,011</b>	<b>18,257</b>	<b>24,472</b>	<b>6,609</b>	<b>11,080</b>	<b>62,990</b>	<b>29,083</b>
<b>Barley. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	0	42	0	0	60	331	0	0	406	0
Spain . . . . .	4	0	0	0	7	4	0	0	15	0
Hungary . . . . .	218	4	0	0	353	42	0	0	55	7
Lithuania . . . . .	0	0	0	0	0	0	0	0	0	0
Poland . . . . .	474	635	0	0	1,422	1,795	0	0	3,146	0
Rumania . . . . .	719	2,092	0	0	8,018	11,195	0	0	15,911	0
Czechoslovakia . . . . .	637	214	0	0	2,077	611	0	0	2,112	2
U. S. S. R. . . . .	1,263	1,673	—	—	5,216	13,003	—	—	17,789	—
Canada . . . . .	359	542	0	0	1,817	2,590	0	0	6,499	0
United States . . . . .	527	79	—	—	1,953	1,224	—	—	2,524	—
Argentina . . . . .	7	110	—	—	33	317	—	—	6,274	—
Chile . . . . .	—	—	—	—	4	40	0	0	492	0
India . . . . .	0	2	0	0	22	2	0	0	666	0
Syria and Lebanon . . . . .	53	44	68	0	22	258	150	46	384	104
Turkey . . . . .	53	370	0	0	441	1,142	0	0	2,996	0
Egypt . . . . .	2	0	0	79	4	4	0	187	2	273
Tunisia . . . . .	—	—	—	—	1,387	110	18	240	820	556
Australia . . . . .	4	9	0	0	24	99	0	0	1,614	0
<i>Importing Countries:</i>										
Germany . . . . .	2	4	187	1,140	2	7	1,023	4,852	18	15,580
Austria . . . . .	0	0	225	231	0	0	672	895	0	2,075
Belgium . . . . .	185	190	1,089	1,164	712	511	3,735	3,915	1,676	9,396
Denmark . . . . .	88	121	295	163	170	203	732	1,795	470	3,331
Irish Free State . . . . .	2	9	0	2	2	13	9	15	26	483
France . . . . .	0	2	941	1,373	0	9	3,607	3,278	15	9,482
Gr. Brit. and N. Irei. . . . .	4	2	1,250	1,883	24	4	5,523	7,831	31	14,039
Greece . . . . .	0	0	0	4	0	0	2	4	0	172
Italy . . . . .	0	0	77	82	0	0	412	218	0	800
Latvia . . . . .	0	0	0	0	0	0	0	0	0	0
Norway . . . . .	0	0	33	150	0	0	71	309	0	794
Netherlands . . . . .	4	31	950	1,036	11	88	3,735	4,087	262	9,112
Switzerland . . . . .	0	0	831	465	0	0	1,867	1,036	2	2,989
Yugoslavia . . . . .	0	0	2	2	2	11	2	33	13	37
Algeria . . . . .	—	—	—	—	37	123	741	884	620	2,520
<b>Totals . . . . .</b>	<b>4,556</b>	<b>6,175</b>	<b>5,948</b>	<b>7,776</b>	<b>23,800</b>	<b>33,732</b>	<b>22,299</b>	<b>29,629</b>	<b>64,838</b>	<b>71,751</b>



COUNTRIES	NOVEMBER				FOUR MONTHS (August 1-November 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1932	1931	1932	1931	1932	1931	1932	1931	1931-32	1931-32

**Oats. — Thousand centals (1 cental = 100 lb.).**

<i>Exporting Countries:</i>										
Irish Free State . . .	4	9	4	9	13	37	9	132	73	220
Hungary . . . . .	9	0	0	0	11	2	0	0	7	2
Lithuania . . . . .	0	0	0	0	0	0	0	0	20	0
Poland . . . . .	4	4	0	0	18	11	0	0	62	0
Rumania . . . . .	57	15	0	0	615	192	0	0	295	0
Czechoslovakia . . .	514	57	0	0	1,232	157	0	53	884	57
Yugoslavia . . . . .	0	0	0	0	0	0	0	0	2	0
Canada . . . . .	520	463	64	212	1,876	1,325	370	514	4,628	655
United States . . . .	86	205	0	2	712	593	0	2	891	22
Argentina . . . . .	692	664	—	—	2,489	3,338	—	—	16,250	—
Chile . . . . .	...	...	...	...	68	44	0	0	223	0
Algeria . . . . .	...	...	...	...	22	9	11	190	273	384
Tunis . . . . .	...	...	...	...	68	106	0	0	212	0
Australia . . . . .	7	2	0	0	68	18	0	0	108	2
<i>Importing Countries</i>										
Germany . . . . .	0	0	7	7	0	2	26	163	9	223
Austria . . . . .	0	0	121	161	0	0	364	459	0	1,462
Belgium . . . . .	0	0	20	46	4	0	121	432	37	1,501
Denmark . . . . .	11	11	0	24	31	29	37	220	66	474
Estonia . . . . .	0	0	0	4	0	0	0	7	0	7
Finland . . . . .	0	4	2	0	2	7	11	40	20	55
France . . . . .	0	0	119	90	2	2	666	448	7	3,214
Gr. Brit. and N. Irel.	2	4	540	425	7	24	2,147	3,159	203	8,494
Italy . . . . .	0	0	179	276	0	0	957	959	0	4,074
Latvia . . . . .	0	0	0	2	0	0	0	7	0	7
Norway . . . . .	0	0	0	11	0	0	11	86	2	273
Netherlands . . . . .	0	7	194	157	2	18	730	690	44	2,390
Sweden . . . . .	4	2	18	159	15	2	209	562	181	1,157
Switzerland . . . . .	0	0	511	522	0	0	1,336	1,532	2	5,033
<b>Totals . . .</b>	<b>1,910</b>	<b>1,447</b>	<b>1,779</b>	<b>2,107</b>	<b>7,255</b>	<b>5,916</b>	<b>7,005</b>	<b>9,655</b>	<b>24,499</b>	<b>29,706</b>

**Maize. — Thousand centals (1 cental = 100 lb.).**

					TWELVE MONTHS (November 1-October 31)				TWELVE MONTHS (Nov 1 Oct 31)	
					1931 32	1930 31	1931 32	1930 31		
<i>Exporting Countries</i>										
Bulgaria . . . . .	699	46	0	0	2,890	3,477	0	0	—	—
Rumania . . . . .	5,635	3,607	0	0	34,421	18,638	2	2	—	—
Yugoslavia . . . . .	1,087	141	0	13	1,825	6,420	26	24	—	—
United States . . . .	1,259	247	13	24	3,084	1,314	220	520	—	—
Argentina . . . . .	10,604	22,002	—	—	175,533	198,743	—	—	—	—
Brazil . . . . .	...	...	—	—	2	18	—	—	—	—
Java and Madura . .	18	44	—	—	2,467	2,407	—	—	—	—
Indo-China . . . . .	620	364	—	—	3,459	1,584	—	—	—	—
Syria and Lebanon . .	2	2	11	0	7	159	37	49	—	—
Turkey . . . . .	7	4	0	0	373	212	0	0	—	—
Egypt . . . . .	9	0	4	4	15	4	46	298	—	—
Union of South Africa	...	...	...	...	4,991	3,298	0	0	—	—
<i>Importing Countries</i>										
Germany . . . . .	0	0	880	780	0	0	17,007	10,007	—	—
Austria . . . . .	0	0	957	597	0	2	7,621	6,270	—	—
Belgium . . . . .	62	40	1,766	1,623	1,385	955	18,691	17,075	—	—
Denmark . . . . .	0	0	1,085	1,347	0	0	21,233	13,539	—	—
Spain . . . . .	0	0	126	278	0	0	6,931	3,666	—	—
Irish Free State . . .	0	0	366	1,080	0	26	13,658	12,044	—	—
Finland . . . . .	0	0	51	71	0	0	582	355	—	—
France . . . . .	0	2	1,409	1,920	26	40	25,869	23,755	—	—
Gr. Brit. and N. Irel.	168	205	3,869	7,535	3,208	2,407	64,058	53,281	—	—
Greece . . . . .	0	0	11	31	0	0	3,382	373	—	—
Hungary . . . . .	161	24	0	31	93	240	939	2,337	—	—
Italy . . . . .	0	0	117	897	7	7	15,737	17,447	—	—
Norway . . . . .	0	0	161	721	0	0	4,092	3,977	—	—
Netherlands . . . . .	7	7	3,146	3,788	223	273	36,928	32,441	—	—
Poland . . . . .	0	0	7	13	0	0	126	496	—	—
Portugal . . . . .	—	—	172	106	—	—	1,407	1,605	—	—
Sweden . . . . .	0	0	238	584	0	0	6,083	7,311	—	—
Switzerland . . . . .	0	0	150	492	2	2	3,717	3,611	—	—
Czechoslovakia . . .	0	0	46	1,464	0	2	9,958	13,115	—	—
Canada . . . . .	13	0	1,490	1,105	13	9	3,891	4,760	—	—
Japan . . . . .	—	—	0	154	—	—	1,695	1,689	—	—
Tunis . . . . .	—	—	—	—	0	9	324	298	—	—
<b>Totals . . .</b>	<b>20,351</b>	<b>26,735</b>	<b>16,575</b>	<b>24,658</b>	<b>234,024</b>	<b>241,246</b>	<b>264,260</b>	<b>230,345</b>	<b>—</b>	<b>—</b>

1) 2) See notes page 64.

COUNTRIES	NOVEMBER				ELEVEN MONTHS (January 1-November 30)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1932	1931	1932	1931	1932	1931	1932	1931	1931	1931

<b>Rice. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Spain . . . . .	75	104	0	0	807	710	0	0	833	0
Italy . . . . .	483	309	11	2	3,036	2,915	55	51	3,325	53
United States . . . . .	176	384	24	15	2,374	2,575	170	291	2,771	328
Brazil . . . . .	—	—	—	—	604	1,830	—	—	1,993	—
India . . . . .	2,317	3,122	82	93	45,396	44,888	584	567	48,442	589
Indo-China . . . . .	2,066	972	—	—	24,370	18,724	—	—	20,715	—
Siam . . . . .	3,069	2,040	—	—	31,491	22,461	—	—	25,029	—
Egypt . . . . .	302	42	0	62	571	644	710	747	686	833
<i>Importing Countries:</i>										
Germany . . . . .	93	139	807	525	996	1,279	7,970	8,164	1,373	8,962
Austria . . . . .	0	0	42	130	0	0	496	626	0	756
Belgium . . . . .	9	24	106	64	194	174	1,091	1,243	190	1,349
Denmark . . . . .	0	0	13	13	0	0	112	139	0	157
Estonia . . . . .	—	—	0	0	—	—	0	33	—	33
Irish Free State . . . . .	0	0	2	2	2	0	44	49	0	53
France . . . . .	106	88	842	472	767	882	7,606	6,142	937	6,792
Gr. Brit. and N. Irel. . . . .	9	31	209	267	157	254	2,535	2,480	271	2,690
Greece . . . . .	—	—	62	46	—	—	476	492	—	540
Hungary . . . . .	0	0	84	49	0	2	430	450	2	481
Latvia . . . . .	0	0	2	2	0	0	18	73	0	82
Lithuania . . . . .	0	0	2	0	0	0	18	20	0	22
Norway . . . . .	0	0	4	15	0	0	66	115	0	117
Netherlands . . . . .	130	190	66	293	1,715	2,348	2,674	4,896	2,480	4,963
Poland . . . . .	24	126	0	7	300	540	1,027	1,691	606	1,726
Portugal . . . . .	—	—	57	46	—	—	794	562	—	613
Sweden . . . . .	—	—	0	0	—	—	90	123	—	123
Switzerland . . . . .	0	0	66	64	0	0	384	406	0	454
Czechoslovakia . . . . .	0	0	101	115	0	0	970	994	0	1,127
Yugoslavia . . . . .	0	0	62	60	2	2	448	452	4	511
Canada . . . . .	0	0	42	60	9	0	573	672	0	710
Chile . . . . .	—	—	—	—	—	—	170	463	—	492
Ceylon . . . . .	0	0	622	741	4	18	9,431	9,361	18	10,196
Java and Madura . . . . .	—	—	—	—	46	229	2,509	5,007	232	6,323
Japan . . . . .	20	51	243	209	670	4,167	2,789	2,524	4,195	2,773
Syria and Lebanon . . . . .	0	0	57	29	0	0	337	291	0	322
Turkey . . . . .	0	0	11	13	0	0	82	174	0	183
Algeria . . . . .	—	—	—	—	9	2	146	101	2	179
Tunis . . . . .	—	—	—	—	0	0	33	26	0	31
Union of South Africa . . . . .	—	—	—	—	0	0	719	899	0	1,025
Australia . . . . .	4	9	7	0	82	141	49	26	161	29
New Zealand . . . . .	—	—	—	—	0	0	55	62	0	73
<b>Totals . . . . .</b>	<b>8,883</b>	<b>7,621</b>	<b>3,626</b>	<b>3,396</b>	<b>113,602</b>	<b>104,785</b>	<b>45,676</b>	<b>50,414</b>	<b>114,265</b>	<b>55,690</b>

<b>Linseed. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Estonia . . . . .	0	0	0	0	2	4	0	0	4	0
Lithuania . . . . .	26	75	0	0	152	220	0	0	247	0
Argentina . . . . .	4,420	2,445	—	—	41,401	38,740	—	—	41,670	—
India . . . . .	126	216	0	0	1,554	2,282	0	0	2,520	0
Tunis . . . . .	—	—	—	—	22	4	0	0	4	0
<i>Importing Countries:</i>										
Germany . . . . .	2	2	791	580	15	13	8,971	6,960	13	7,507
Belgium . . . . .	7	55	313	196	134	183	3,239	3,470	205	3,702
Denmark . . . . .	—	—	51	15	—	—	452	388	—	417
Spain . . . . .	—	—	60	26	—	—	487	395	—	465
Finland . . . . .	0	0	7	11	0	0	57	62	0	68
France . . . . .	0	2	128	448	7	15	4,458	5,390	18	5,875
Gr. Brit. and N. Irel. . . . .	0	0	494	701	4	4	7,853	7,090	4	7,599
Greece . . . . .	0	0	11	7	0	0	77	90	0	95
Hungary . . . . .	0	7	18	0	9	42	18	2	42	2
Italy . . . . .	0	0	134	101	0	0	1,310	1,252	0	1,351
Latvia . . . . .	9	26	20	9	35	88	68	86	106	90
Norway . . . . .	0	0	26	22	0	0	364	256	0	289
Netherlands . . . . .	0	2	805	531	75	49	9,222	8,713	49	9,253
Poland . . . . .	0	0	95	0	2	7	245	271	7	273
Sweden . . . . .	—	—	31	40	—	—	950	985	—	1,056
Czechoslovakia . . . . .	0	0	71	44	2	4	675	534	7	582
Yugoslavia . . . . .	0	0	2	9	0	0	99	126	0	126
Canada . . . . .	0	0	0	104	205	483	256	194	584	194
United States . . . . .	—	—	216	690	—	—	3,922	7,998	—	8,109
Japan . . . . .	—	—	9	18	—	—	126	168	—	185
Australia . . . . .	0	0	22	22	0	0	439	289	0	291
<b>Totals . . . . .</b>	<b>4,590</b>	<b>2,830</b>	<b>3,304</b>	<b>3,574</b>	<b>43,619</b>	<b>42,138</b>	<b>43,288</b>	<b>44,719</b>	<b>45,480</b>	<b>47,529</b>

1) 2) See notes page 64.

COUNTRIES	NOVEMBER				ELEVEN MONTHS (January 1-November 30)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1932	1931	1932	1931	1932	1931	1932	1931	1931	1931
<b>Butter. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Austria . . . . .	317	271	2	2	1,307	2,652	800	1,561	2,862	1,565
Denmark . . . . .	24,169	27,827	42	37	319,826	348,281	937	1,473	378,429	1,596
Estonia . . . . .	1,431	2,163	0	0	26,581	30,565	0	0	31,844	0
Irish Free State . . . . .	1,931	2,432	13	11	36,079	41,817	2,630	3,269	42,307	3,325
Finland . . . . .	1,812	2,024	0	0	29,987	35,552	0	0	38,367	0
Hungary . . . . .	516	710	0	0	4,123	3,587	0	117	4,065	117
Latvia . . . . .	2,231	3,027	0	0	39,092	39,465	0	24	41,313	24
Lithuania . . . . .	1,376	802	0	0	21,246	18,625	0	0	19,191	0
Norway . . . . .	37	66	2	35	2,156	1,515	88	337	1,629	379
Netherlands . . . . .	5,503	3,644	247	1,462	37,748	68,586	9,158	6,942	72,660	8,887
Poland . . . . .	26	1,479	0	0	2,705	26,930	860	31	27,470	31
Sweden . . . . .	1,810	2,531	2	2	27,300	40,649	26	33	43,162	40
U. S. S. W. . . . .	—	—	—	—	51,289	49,939	—	—	68,024	—
Argentina . . . . .	6,347	7,679	—	—	50,045	43,422	—	—	51,167	—
India . . . . .	29	42	42	33	234	320	395	315	366	344
Syria and Lebanon . . . . .	66	115	95	33	293	1,724	1,731	302	1,817	344
Australia . . . . .	32,234	23,964	0	0	198,485	184,397	0	0	208,924	0
New Zealand . . . . .	32,688	26,354	—	—	211,400	189,651	—	—	220,814	—
<i>Importing Countries:</i>										
Germany . . . . .	0	4	13,775	19,174	476	265	140,900	200,568	269	220,950
Belgium . . . . .	24	104	3,810	3,929	1,817	2,670	43,076	37,001	2,756	41,562
Spain . . . . .	2	9	4	40	42	86	35	82	88	121
France . . . . .	600	1,160	3,135	615	7,264	10,121	21,045	40,750	11,036	40,819
Gr. Brit. and N. Irel . . . . .	1,559	3,003	75,586	66,831	33,920	31,577	851,774	816,180	40,228	903,967
Greece . . . . .	—	—	134	238	—	—	1,133	1,830	—	2,059
Italy . . . . .	29	33	86	379	794	1,250	3,583	5,421	1,268	6,188
Switzerland . . . . .	0	2	236	1,973	4	15	7,167	20,754	20	23,358
Czechoslovakia . . . . .	0	141	49	273	26	622	2,659	3,953	661	4,107
Canada . . . . .	119	675	4	2	3,426	10,395	201	2,820	10,681	2,822
United States . . . . .	90	93	66	134	1,468	1,878	913	1,676	2,008	1,881
Ceylon . . . . .	—	—	49	93	—	—	527	578	—	642
Java and Madura . . . . .	—	—	—	—	—	—	7,485	7,132	—	8,514
Japan . . . . .	—	—	2	29	—	—	—	207	—	231
Algeria . . . . .	—	—	—	—	—	—	—	—	—	—
Egypt . . . . .	4	9	82	101	364	44	2,577	3,117	73	4,389
Tunis . . . . .	—	—	—	—	—	—	765	1,918	77	2,041
<b>Totals . . . . .</b>	<b>114,950</b>	<b>110,363</b>	<b>97,463</b>	<b>95,426</b>	<b>1,109,528</b>	<b>1,186,653</b>	<b>1,101,545</b>	<b>1,159,122</b>	<b>1,323,585</b>	<b>1,281,233</b>
<b>Cheese. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	452	395	0	0	2,099	2,853	2	4	3,133	4
Denmark . . . . .	1,464	628	7	51	13,261	8,669	115	562	9,383	604
Finland . . . . .	481	412	4	0	6,885	5,426	20	22	5,776	33
Italy . . . . .	5,512	8,098	675	657	60,544	81,986	8,104	9,606	89,201	10,132
Lithuania . . . . .	179	258	0	0	1,640	2,341	4	11	2,546	11
Norway . . . . .	381	406	37	44	3,433	2,599	216	514	2,840	562
Netherlands . . . . .	12,048	15,937	99	126	158,806	178,180	979	1,217	190,460	1,345
Poland . . . . .	29	313	57	55	739	2,778	540	714	2,884	761
Switzerland . . . . .	3,583	3,534	351	990	40,406	51,983	4,361	7,322	54,307	8,470
Czechoslovakia . . . . .	518	2,000	209	273	5,750	9,670	2,877	3,532	10,981	3,779
Yugoslavia . . . . .	496	494	9	20	2,518	3,962	139	227	4,198	243
Canada . . . . .	12,095	11,021	223	154	82,528	80,894	1,091	1,288	84,790	1,446
Australia . . . . .	1,700	556	18	0	6,936	5,818	46	22	7,405	24
New Zealand . . . . .	20,673	20,990	0	0	160,111	159,950	2	4	181,703	4
<i>Importing Countries:</i>										
Germany . . . . .	448	807	7,542	10,144	3,664	6,797	101,836	112,053	7,372	120,404
Austria . . . . .	474	441	249	333	3,616	5,853	3,455	5,421	6,232	5,781
Belgium . . . . .	40	62	1,911	4,169	520	765	41,963	46,183	814	49,600
Spain . . . . .	15	9	324	293	225	229	2,178	3,426	236	3,867
Irish Free State . . . . .	4	26	—	159	37	154	1,889	2,421	194	2,687
France . . . . .	2,857	3,197	5,307	7,445	26,211	30,314	47,472	77,114	33,239	82,810
Gr. Brit. and N. Irel . . . . .	478	564	27,930	28,625	6,550	6,658	305,445	294,448	7,346	323,691
Greece . . . . .	117	7	240	456	496	165	1,618	3,435	190	3,960
Hungary . . . . .	2	7	0	4	33	104	11	194	110	203
Portugal . . . . .	—	—	64	68	—	—	500	701	—	842
Sweden . . . . .	—	—	148	181	—	—	935	1,510	—	1,691
United States . . . . .	104	148	6,609	6,058	1,360	1,653	50,786	56,798	1,863	61,992
India . . . . .	0	2	126	71	2	4	853	780	7	886
Java and Madura . . . . .	—	—	—	—	—	—	1,380	1,362	—	1,658
Syria and Lebanon . . . . .	20	7	141	79	68	86	1,043	661	86	708
Algeria . . . . .	—	—	—	—	110	130	8,016	5,761	172	11,182
Egypt . . . . .	29	4	650	699	231	57	4,769	4,614	73	7,304
Tunis . . . . .	—	—	—	—	9	24	1,726	1,530	24	2,033
<b>Totals . . . . .</b>	<b>64,199</b>	<b>70,323</b>	<b>52,932</b>	<b>61,154</b>	<b>588,788</b>	<b>650,093</b>	<b>594,371</b>	<b>643,457</b>	<b>707,565</b>	<b>708,117</b>

1) 2) See notes page 64.

COUNTRIES	NOVEMBER				FOUR MONTHS (August 1-November 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1932	1931	1932	1931	1932	1931	1932	1931	1931-32	1931-32
<b>Cotton. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
United States . . .	5,412	5,701	44	31	17,333	15,300	137	106	46,787	620
Argentina . . .	26	37	—	—	273	243	—	—	586	—
Brazil . . .	—	—	—	—	110	110	—	—	183	—
India . . .	487	545	22	49	1,956	2,515	141	243	7,088	2,249
Egypt . . .	697	908	0	0	1,821	2,487	0	0	7,500	0
<i>Importing Countries:</i>										
Germany . . .	99	112	992	785	505	624	2,813	2,090	1,640	8,327
Austria . . .	0	0	35	57	0	0	137	165	0	551
Belgium . . .	22	29	234	123	84	139	608	503	348	1,349
Denmark . . .	—	—	7	15	—	—	35	35	—	139
Spain . . .	2	0	231	198	7	4	719	503	24	2,337
Estonia . . .	0	0	4	7	0	0	18	22	0	75
Finland . . .	0	0	24	15	0	0	62	55	0	159
France . . .	26	68	672	291	112	225	2,147	869	494	4,264
Gr. Brit. and N. Irel.	53	24	1,446	1,700	157	112	3,900	3,336	485	12,452
Greece . . .	0	0	18	22	0	0	46	71	0	192
Hungary . . .	0	0	49	33	0	0	130	90	0	333
Italy . . .	0	0	324	298	0	0	1,087	977	0	4,039
Latvia . . .	0	0	7	11	0	0	20	29	0	51
Norway . . .	0	0	9	7	0	0	22	11	0	44
Netherlands . . .	0	2	77	97	2	4	209	317	7	860
Poland . . .	2	2	97	95	9	9	432	395	22	1,074
Portugal . . .	—	—	42	42	—	—	132	115	—	434
Sweden . . .	—	—	82	79	—	—	179	198	—	564
Switzerland . . .	0	0	73	60	0	4	183	148	4	505
Czechoslovakia . . .	11	13	141	201	46	51	582	672	137	2,002
Yugoslavia . . .	0	0	11	15	0	0	53	64	0	201
Canada . . .	—	—	154	157	—	—	340	333	—	974
Japan . . .	62	64	935	0	152	295	3,289	2,553	1,041	16,486
Algeria . . .	—	—	—	—	0	0	0	0	4	7
<b>Totals . . .</b>	<b>6,899</b>	<b>7,505</b>	<b>5,730</b>	<b>4,388</b>	<b>22,459</b>	<b>22,122</b>	<b>17,421</b>	<b>13,900</b>	<b>66,350</b>	<b>60,288</b>

**Wool. — (Thousand lb.).**

COUNTRIES	THREE MONTHS (September 1-November 30)				TWELVE MONTHS (Sept. 1-August 31)			
	EXPORTS		IMPORTS		EXPORTS		IMPORTS	
	1932	1931	1932	1931	1932	1931	1932	1931
<i>Exporting Countries:</i>								
Irish Free State . .	1,347	1,585	35	51	4,195	3,977	231	216
Hungary . . .	300	300	134	132	851	1,098	313	439
Argentina . . . (a)	26,542	18,268	—	—	55,001	33,709	—	—
Chile . . . (b)	1,177	560	—	—	3,411	2,350	—	—
India . . .	5,428	3,686	564	278	626	254	—	—
Syria and Lebanon .	170	836	29	20	12,432	9,365	1,700	1,047
Algeria . . .	—	—	—	—	1,274	1,647	829	328
Egypt . . .	302	240	0	0	551	622	229	93
Un. of S. Africa . (a)	—	—	—	—	1,089	549	0	0
Australia . . . (b)	129,174	115,798	22	11	38,938	11,603	11	0
New Zealand . . . (a)	6,601	7,910	0	0	968	472	110	430
United States . . . (b)	1,565	1,825	0	2	289,437	260,969	93	40
Totals . . .	2,844	2,271	0	2	12,796	7,460	9	2
<i>Importing Countries:</i>								
Germany . . . (a)	117	862	26,048	7,059	988	4,411	44,236	22,604
Austria . . . (b)	811	979	3,073	2,806	2,363	3,585	8,697	7,106
Belgium . . . (a)	4	4	1,486	950	18	29	3,706	1,933
Denmark . . . (b)	4,883	1,160	14,094	7,214	12,736	4,160	28,907	15,761
Spain . . .	1,356	2,538	351	470	5,007	6,550	1,124	1,021
Finland . . .	11	7	536	520	68	29	1,605	1,133
France . . .	414	337	926	104	774	646	4,422	628
Gr. Brit. and N. Irel.	11	2	381	260	26	4	1,111	608
Greece . . .	3,565	6,718	42,060	19,063	8,843	15,589	82,938	42,768
Italy . . . (a)	33,462	13,170	66,617	51,297	77,925	46,714	138,903	108,834
Norway . . . (b)	161	2	256	137	243	55	498	540
Netherlands . . . (a)	18	97	4,184	6,429	82	315	15,419	15,578
Poland . . .	209	168	1,420	1,702	1,124	683	4,189	4,114
Sweden . . .	88	71	229	183	187	580	582	756
Switzerland . . . (a)	196	271	725	247	776	606	1,552	1,215
Czechoslovakia . . . (b)	77	77	602	496	298	143	2,355	1,870
Yugoslavia . . .	176	238	1,647	1,052	384	754	6,069	3,691
Canada . . .	—	—	1,755	893	—	—	4,107	3,530
United States . . .	22	44	1,288	331	73	249	4,244	2,917
Japan . . .	201	313	2,639	2,377	373	855	8,089	8,058
Tunis . . .	44	33	163	165	86	49	602	741
Totals . . .	231	1,790	769	322	1,470	2,928	1,671	1,131
United States . . .	44	84	5,456	6,978	280	271	11,480	32,117
Japan . . .	0	0	25,371	0	15	15	33,334	15,704
Tunis . . .	—	—	—	—	7	37	134	148
<b>Totals . . .</b>	<b>221,551</b>	<b>182,244</b>	<b>202,777</b>	<b>111,597</b>	<b>560,088</b>	<b>444,954</b>	<b>413,490</b>	<b>296,929</b>

a) = Wool, greasy; b) = Wool, scoured. — 1) 2) See notes page 64.

COUNTRIES	NOVEMBER		FIVE MONTHS (July 1-Nov. 30)		TWELVE MONTHS (July 1- June 30)	COUNTRIES	NOVEMBER		FIVE MONTHS (July 1-Nov. 30)		TWELVE MONTHS (July 1- June 30)
	1932	1931	1932	1931	1931-32		1932	1931	1932	1931	1931-32
<b>Coffee. — (Thousand lb.).</b>						<b>Tea. — (Thousand lb.).</b>					
<b>EXPORTS.</b>						<b>EXPORTS.</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	1) 416,543	1) 687,051	2,022,263	Ceylon . . . . .	17,134	17,311	95,467	86,097	245,982
India . . . . .	628	384	3,389	2,754	17,926	India . . . . .	52,435	42,499	238,570	212,143	342,946
Java and Madura .	6,934	3,918	62,589	23,087	51,725	Java and Madura .	14,420	15,479	60,912	64,946	163,312
						Japan . . . . .	3,014	1,669	17,624	12,769	24,590
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	172	262	739	1,054	1,649	Belgium . . . . .	0	2	4	11	22
Belgium . . . . .	26	1,603	267	4,872	9,643	Irish Free State .	4	18	11	97	258
France . . . . .	0	0	4	7	15	France . . . . .	2	4	7	20	35
Netherlands . . . .	1,620	994	7,255	4,958	15,265	Gr. Brit. and N. Irel.	8,159	8,730	36,326	40,393	77,887
Portugal . . . . .	137	95	593	381	1,270	Netherlands . . . .	11	9	49	60	139
Switzerland . . . . .	137	53	172	282	613	United States . . .	22	40	123	154	474
Canada . . . . .	7	7	24	22	42	Syria and Lebanon	0	0	0	4	20
United States . . . .	1,836	1,133	6,045	6,261	22,593	Algeria . . . . .	...	...	2) 7 2)	4	49
Ceylon . . . . .	0	2	7	7	11	Union of S. Africa.	...	...	1) 4 1)	20	121
Syria and Lebanon .	0	0	7	4	46	Australia . . . . .	73	31	306	313	549
Australia . . . . .	0	2	11	29	55	New Zealand . . . .	...	...	1) 31 1)	18	148
<b>Totals . . . . .</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>2,143,116</b>	<b>Totals . . . . .</b>	<b>95,274</b>	<b>85,792</b>	<b>449,441</b>	<b>417,049</b>	<b>856,532</b>
<b>IMPORTS.</b>						<b>IMPORTS</b>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	21,347	23,887	110,331	129,648	307,608	Germany . . . . .	858	924	4,317	4,277	10,494
Austria . . . . .	670	1,642	6,689	6,512	16,998	Austria . . . . .	73	134	439	498	1,131
Belgium . . . . .	7,370	9,793	47,430	53,663	114,762	Belgium . . . . .	44	53	234	254	661
Bulgaria . . . . .	71	134	194	481	1,638	Denmark . . . . .	148	104	494	531	1,380
Denmark . . . . .	4,160	5,668	15,801	26,101	66,439	Spain . . . . .	22	37	112	119	322
Spain . . . . .	4,079	4,200	18,067	18,512	53,912	Estonia . . . . .	9	11	33	57	172
Estonia . . . . .	9	15	33	101	298	Irish Free State .	2,802	2,965	10,042	11,579	25,122
Irish Free State . .	44	46	154	181	522	Finland . . . . .	9	60	73	148	249
Finland . . . . .	2,758	3,962	13,900	16,903	32,481	France . . . . .	340	322	1,226	1,299	3,397
France . . . . .	38,863	38,182	166,465	186,033	427,513	Gr. Britain and N.	69,825	57,069	285,255	259,866	550,364
Gr. Britain and N.						Ireland . . . . .	55	77	201	315	699
Ireland . . . . .	2,685	2,901	15,545	15,474	37,516	Greece . . . . .	57	82	271	330	562
Greece . . . . .	712	1,664	3,697	6,129	13,010	Hungary . . . . .	29	37	86	126	333
Hungary . . . . .	478	476	2,504	2,740	6,041	Italy . . . . .	9	18	57	64	128
Italy . . . . .	7,531	7,941	35,393	38,319	93,393	Latvia . . . . .	9	18	44	71	119
Latvia . . . . .	24	26	90	168	375	Lithuania . . . . .	26	40	161	165	386
Lithuania . . . . .	22	31	137	172	445	Netherlands . . . .	2,842	2,315	18,810	12,591	30,836
Norway . . . . .	2,983	3,741	14,171	16,667	38,189	Poland . . . . .	351	384	1,523	1,764	4,317
Netherlands . . . .	14,103	9,138	46,676	45,799	103,379	Portugal . . . . .	37	51	146	276	648
Poland . . . . .	1,243	1,607	5,981	7,264	17,185	Sweden . . . . .	75	90	340	381	858
Portugal . . . . .	1,202	946	3,805	4,198	10,657	Switzerland . . . .	423	157	1,003	758	1,782
Sweden . . . . .	6,621	18,909	37,668	55,682	107,586	Czechoslovakia . .	342	176	765	1,098	1,727
Switzerland . . . . .	7,573	2,696	17,580	12,816	34,286	Yugoslavia . . . . .	66	77	234	386	622
Czechoslovakia . .	3,988	1,726	12,434	15,477	32,386	Canada . . . . .	3,192	3,217	12,540	11,226	39,031
Yugoslavia . . . . .	1,213	1,548	5,961	7,848	17,434	United States . . .	10,364	7,813	43,405	41,207	90,460
Canada . . . . .	2,784	2,573	10,064	11,067	31,963	Chile . . . . .	...	...	1) 1,343 1)	2,299	5,172
United States . . . .	123,406	123,495	516,642	610,008	1,628,986	Syria and Lebanon	26	31	66	214	586
Chile . . . . .	...	...	2,983 1)	3,915	9,308	Turkey . . . . .	60	130	1,067	785	1,504
Ceylon . . . . .	320	75	1,153	2,264	3,572	Algeria . . . . .	...	...	2) 999 2)	531	10,421
Japan . . . . .	317	412	1,515	2,072	6,724	Egypt . . . . .	1,883	955	8,796	6,587	13,999
Syria and Lebanon .	243	192	948	948	2,324	Tunis . . . . .	...	...	1) 919 1)	4,793	6,669
Turkey . . . . .	49	774	4,645	4,361	8,841	Union of S. Africa.	...	...	1) 3,805 1)	6,444	12,683
Algeria . . . . .	...	...	7,443 2)	7,483	30,532	Australia . . . . .	5,033	4,228	23,080	18,735	44,899
Egypt . . . . .	1,058	961	6,559	6,204	15,862	New Zealand . . . .	...	...	1) 3,508 1)	4,217	2,522
Tunis . . . . .	...	...	999 1)	1,166	3,190						
Un. of S. Africa . .	...	...	9,606 1)	11,345	26,026						
Australia . . . . .	187	240	968	1,442	3,510						
New Zealand . . . .	...	...	106 1)	170	452						
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
India . . . . .	0	2	110	60	106	India . . . . .	959	935	3,142	4,127	6,486
						Java and Madura .	...	...	1) 2,379 1)	4,332	9,771
<b>Totals . . . . .</b>	<b>258,113</b>	<b>269,604</b>	<b>1,144,447</b>	<b>1,329,393</b>	<b>3,305,469</b>	<b>Totals . . . . .</b>	<b>99,968</b>	<b>82,510</b>	<b>430,915</b>	<b>402,450</b>	<b>880,532</b>

1) 2) See notes page 64.

COUNTRIES	NOVEMBER		TWO MONTHS (Oct. 1-Nov. 30)		TWELVE MONTHS (Oct. 1- Sept. 30)	COUNTRIES	NOVEMBER		FOUR MONTHS (August 1-Nov. 30)		TWELVE MONTHS (August 1- July 31)
	1932	1931	1932	1931	1931-32		1932	1931	1932	1931	1931-32
Cacao. — (Thousand lb.).						Total Wheat and Flour *)					
EXPORTS.						(Thousand centals).					
Exporting Countries.						a) NET EXPORTS.					
Grenada . . . . .	...	...	...	...	9,376	Germany . . . . .	437	115	1,541	3)	3)
Dominican Republ. . . . .	...	...	...	...	35,935	Bulgaria . . . . .	419	820	919	2,974	6,691
Brazil . . . . .	...	...	1) 42,212	1) 11,008	197,978	Spain . . . . .	...	...	...	...	...
Ecuador . . . . .	...	...	...	...	35,689	Hungary . . . . .	201	2,621	1,973	6,693	10,752
Trinidad . . . . .	...	...	774	2,974	38,442	Lithuania . . . . .	2	2	9	13	55
Venezuela . . . . .	...	...	...	...	31,204	Poland . . . . .	3)	146	3)	450	1,929
Ceylon . . . . .	1,096	946	1,680	1,323	9,266	Rumania . . . . .	2	3,627	37	18,832	22,335
Java and Madura . . . . .	218	152	597	545	3,366	U. S. S. R. . . . .	5) 2,826	5) 3,607	5) 7,011	5) 34,930	5) 37,909
Cameroun . . . . .	...	...	...	...	27,315	Yugoslavia . . . . .	84	1,076	346	5,646	8,935
Ivory Coast . . . . .	...	...	...	...	54,578	Canada . . . . .	17,884	17,710	72,323	49,042	123,625
Gold Coast . . . . .	58,617	42,239	96,455	54,776	462,878	United States . . . . .	2,921	7,328	10,501	27,825	65,566
Nigeria . . . . .	...	...	1) 11,934	1) 3,715	130,779	Argentina . . . . .	2,449	3,664	8,735	14,886	83,496
St. Thomas and Pruce Is. . . . .	...	...	1) 1,896	1) 3,840	27,626	Chile . . . . .	...	...	3)	1)	9
Togoland . . . . .	...	...	...	...	13,916	India . . . . .	51	126	227	381	1,118
						Syria and Lebanon . . . . .	3)	57	3)	280	3)
						Turkey . . . . .	22	97	37	194	922
						Algeria . . . . .	...	...	1) 2,044	2)	474
						Tunis . . . . .	...	...	1) 1,660	1)	5,104
						Australia . . . . .	4,422	3,794	15,695	10,359	92,453
						Totals . . . . .	31,720	44,790	123,058	183,190	464,444
IMPORTS						c) NET IMPORTS.					
Importing Countries.						Importing Countries					
Germany . . . . .	13,971	14,101	28,363	31,264	175,744	Germany . . . . .	4)	4)	368	13,913	
Austria . . . . .	465	1,389	990	2,520	13,561	Austria . . . . .	569	1,087	1,984	2,586	
Belgium . . . . .	1,437	1,204	2,582	2,568	21,588	Belgium . . . . .	1,479	2,244	7,401	9,943	
Bulgaria . . . . .	15	79	42	101	1,323	Denmark . . . . .	525	1,640	2,972	5,236	
Denmark . . . . .	351	388	538	507	7,756	Spain . . . . .	212	26	3,430	22	
Spain . . . . .	1,235	401	1,828	1,429	21,892	Estonia . . . . .	0	11	0	123	
Estonia . . . . .	11	26	22	77	452	Irish Free State . . . . .	756	692	3,545	4,308	
Irish Free State . . . . .	49	134	157	238	1,149	Finland . . . . .	291	483	992	1,347	
Finland . . . . .	22	29	31	77	181	France . . . . .	1,389	2,685	10,560	14,610	
France . . . . .	12,478	6,971	20,329	15,300	91,263	Gr. Brit. and N. Irel. . . . .	9,800	13,391	42,082	63,341	
Gr. Brit. and N. Irel. . . . .	12,657	10,163	25,887	19,930	138,407	Greece . . . . .	1,056	1,142	4,043	4,874	
Greece . . . . .	353	269	329	624	2,844	Italy . . . . .	569	586	869	1,737	
Hungary . . . . .	439	1,179	670	1,517	5,573	Latvia . . . . .	0	46	13	216	
Italy . . . . .	1,905	1,684	2,879	2,665	15,053	Norway . . . . .	432	802	1,453	1,949	
Latvia . . . . .	90	97	106	185	1,607	Netherlands . . . . .	1,186	1,581	5,467	6,735	
Lithuania . . . . .	29	49	60	75	615	Poland . . . . .	22	4)	31	4)	
Norway . . . . .	262	701	333	1,067	5,033	Portugal . . . . .	130	31	373	509	
Netherlands . . . . .	5,384	5,216	11,089	13,887	92,202	Sweden . . . . .	137	538	1,157	1,217	
Poland . . . . .	1,118	963	2,145	2,094	11,444	Switzerland . . . . .	5) 1,316	5) 1,312	5) 4,482	5) 5,170	
Portugal . . . . .	119	95	161	194	855	Czechoslovakia . . . . .	18	1,620	569	5,598	
Sweden . . . . .	617	1,391	977	2,011	10,481	Chile . . . . .	...	...	1)	79	
Switzerland . . . . .	1,016	401	1,400	1,226	11,197	Ceylon . . . . .	68	44	196	185	
Czechoslovakia . . . . .	1,305	1,307	2,930	2,313	21,526	Indo-China . . . . .	37	44	165	187	
Yugoslavia . . . . .	146	55	170	269	1,501	Japan . . . . .	75	628	351	2,352	
Canada . . . . .	1,905	1,603	3,164	2,610	16,444	Java and Madura . . . . .	...	...	1)	311	
United States . . . . .	44,196	18,565	88,191	36,828	420,143	Syria and Lebanon . . . . .	9)	4)	46	4)	
Australia . . . . .	251	985	375	2,024	11,252	Egypt . . . . .	18	688	157	1,673	
New Zealand . . . . .	...	...	130	126	1,554	Union of S. Africa . . . . .	...	...	1)	121	
						New Zealand . . . . .	...	...	1)	452	
						Totals . . . . .	20,094	31,321	93,301	135,179	382,130

\*) Flour reduced to grain on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 31 October. — 2) Data up to 30 September — 3) See Net Imports. — 4) See Net Exports. — 5) Wheat only. —

6) Data up to 31 August

## STOCKS

STOCKS (TOTAL AND QUANTITIES FOR SALE) IN FARMERS' HANDS IN GERMANY.

PRODUCTS	% Total stocks : total production				% Quantities intended for sale : total production				% Stocks in elevators; total production 1)	
	15 Dec. 1932	15 Nov. 1932	15 Dec. 1931	15 Dec. 1930	15 Dec. 1932	15 Nov. 1932	15 Dec. 1931	15 Dec. 1930	15 Dec. 1932	15 Nov. 1932
Winter wheat . . .	52.5	59.5	37.5	43.7	42.1	49.5	30.0	35.2	7.2	6.2
Spring wheat . . .	72.7	77.3	66.8	68.5	61.2	65.3	54.7	53.5	7.4	5.9
Winter rye . . .	51.1	59.5	41.0	53.4	28.8	33.6	17.4	28.5	3.6	3.4
Winter barley . . .	26.4	34.4	26.7	28.3	3.8	5.7	4.2	3.7	0.2	0.8
Spring barley . . .	49.7	62.2	54.4	48.1	27.4	36.8	32.6	27.0	0.7	0.4
Oats . . .	70.7	78.9	69.0	72.9	16.9	19.2	16.5	19.7	0.6	0.2
Potatoes . . .	58.0	66.8	55.7	58.5	17.9	21.4	16.9	18.0	0.2	0.0

1) These stocks are the property of farmers but are not on the farms; as they are partly in commercial elevators certain quantities are reckoned twice, the report on stocks in elevators not making any distinction of ownership  
 Authority: Preisberichtsstelle beim Deutschen Landwirtschaftsrat.

STOCKS OF CEREALS IN COMMERCIAL ELEVATORS AND MILLS IN GERMANY 1).

PRODUCTS	Last day of month			Last day of month		
	December 1932	November 1932	October 1932	December 1932	November 1932	October 1932
	1,000 centals			1,000 bushels or barrels		
WHEAT:						
Grain . . . . .	15,527	14,398	14,928	25,878	23,997	24,879
Flour for bread . . . . .	3,078	2,701	2,811	1,570	1,378	1,434
TOTAL 2) . . .	19,630	17,998	18,675	32,716	29,999	31,125
RYE:						
Grain . . . . .	12,921	11,429	11,976	23,074	20,409	21,385
Flour for bread . . . . .	1,795	1,611	1,664	916	832	849
TOTAL 2) . . .	15,313	13,605	14,196	27,349	24,292	25,349
BARLEY . . . . .	4,237	4,059	3,578	8,828	8,456	7,455
OATS . . . . .	2,253	1,918	1,614	7,041	5,994	5,043

1) See note under the corresponding table in the Bulletin for March, on page 218. — 2) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain (1,000 barrels of flour = 4,355.55 bushels of wheat or 4,584.80 bushels of rye).

QUANTITIES OF CEREALS ON OCEAN PASSAGE WITH FIRST DESTINATION FOR EUROPE.

PRODUCTS	Saturday nearest to 1st of month					Saturday nearest to 1st of month				
	Jan. 1933	Dec. 1932	Nov. 1932	Jan. 1932	Jan. 1931	Jan. 1933	Dec. 1932	Nov. 1932	Jan. 1932	Jan. 1931
	1,000 centals					1,000 bushels				
Wheat (and flour in terms of wheat) .	21,850	23,765	19,128	17,890	16,363	36,416	39,608	31,880	29,816	27,272
Rye. . . . .	19	384	326	1,445	379	34	686	583	2,580	677
Barley. . . . .	1,224	1,632	2,652	1,800	4,780	2,550	3,400	5,525	3,750	9,958
Oats . . . . .	710	1,264	976	838	1,197	2,220	3,950	3,050	2,620	3,740
Maize . . . . .	12,662	16,234	12,547	22,262	15,350	22,611	28,989	22,406	39,754	27,411

Authority: Broomhall's Corn Trade News.

## COMMERCIAL CEREALS IN STORE IN CANADA AND THE UNITED STATES.

SPECIFICATION	Friday or Saturday nearest to 1st of month					Friday or Saturday nearest to 1st of month				
	Jan. 1933	Dec. 1932	Nov 1932	Jan 1932	Jan 1931	Jan 1933	Dec. 1932	Nov. 1932	Jan 1932	Jan. 1931
	1,000 centals					1,000 bushels				
<b>WHEAT:</b>										
Canadian in Canada . . . .	141,910	142,316	143,661	103,579	111,010	236,516	237,194	239,435	172,631	185,017
U. S. in Canada . . . . .	4,163	4,200	4,574	17,152	2,981	6,938	7,000	7,623	28,586	4,819
U. S. in the United States . .	101,182	105,869	115,128	136,124	119,789	168,636	176,448	191,880	226,874	199,649
Canad. in the United States .	8,144	9,118	8,350	15,307	19,360	13,574	15,196	13,916	25,512	32,266
Total . . . . .	255,399	261,503	271,713	272,162	253,050	425,664	435,838	452,854	453,603	421,751
<b>RYE:</b>										
Canadian in Canada . . . .	2,792	2,671	2,943	6,425	7,356	4,985	4,770	5,256	11,473	13,135
U. S. in Canada . . . . .	55	55	55	422	1,193	99	99	99	754	2,131
U. S. in the United States . .	4,476	4,496	4,752	5,725	9,162	7,992	8,029	8,485	10,223	16,361
Canad. in the United States .	307	231	281	978	274	548	412	502	1,746	489
Total . . . . .	7,630	7,453	8,031	13,550	17,985	13,624	13,310	14,342	24,196	32,116
<b>BARLEY:</b>										
Canadian in Canada . . . .	3,190	2,892	2,820	4,786	14,410	6,645	6,024	5,874	9,970	30,021
U. S. in Canada . . . . .	10	10	55	12	162	21	21	114	25	338
U. S. in the United States . .	4,918	4,734	4,503	2,959	6,714	10,245	9,862	8,381	6,164	13,987
Canad. in the United States .	0	0	22	762	638	0	0	46	1,587	1,329
Total . . . . .	8,118	7,636	7,400	8,519	21,924	16,911	15,907	15,415	17,746	45,675
<b>OATS: (1)</b>										
Canadian in Canada . . . .	3,172	3,099	2,828	5,298	5,118	9,911	9,685	8,836	16,556	15,993
U. S. in Canada . . . . .	372	374	478	56	501	1,162	1,170	1,495	175	1,567
U. S. in the United States . .	8,470	8,795	9,307	5,379	9,887	26,468	27,484	29,084	16,810	30,896
Canad. in the United States .	0	0	0	10	81	0	0	0	32	255
Total . . . . .	12,014	12,268	12,613	10,743	15,587	37,541	38,339	39,415	33,573	48,711
<b>MAIZE:</b>										
U. S. in Canada . . . . .	2,129	2,358	1,962	515	305	3,801	4,211	3,503	920	545
Of other origin in Canada . .	998	942	208	1,177	681	1,782	1,682	371	2,102	1,216
U. S. in the United States . .	17,172	15,193	15,468	7,092	9,626	30,665	27,130	27,621	12,664	17,190
Total . . . . .	20,299	18,493	17,638	8,784	10,612	36,248	33,023	31,495	15,683	18,951

1) For oats the bushel is of 32 lbs.

## STOCKS IN ENGLAND AND WALES IN FARMERS' HANDS

PRODUCTS	% Stocks total production				Estimated stocks in absolute figures							
	Jan. 1, 1933	April 1, 1932	Jan. 1, 1932	Jan. 1, 1931	Jan. 1, 1933	April 1, 1932	Jan. 1, 1932	Jan. 1, 1931	Jan. 1, 1933	April 1, 1932	Jan. 1, 1932	Jan. 1, 1931
					1,000 centals				1,000 bushels (1)			
Wheat	41	21	56	50	10,058	4,525	11,984	11,894	16,763	7,541	19,973	19,824
Barley	41	12	38	40	7,078	3,038	6,518	6,563	14,747	4,247	13,580	13,673
Oats .	55	20	55	56	15,389	5,533	15,322	16,845	48,090	17,290	47,880	52,640
Potatoes .	49	11	47	49	36,490	5,869	22,557	30,150	60,816	9,781	37,595	50,251
Hay . .	70	32	71	67	107,162	56,045	125,440	118,496	5,358	2,802	6,272	5,925
Straw .	65	26	63	60	54,410	21,616	52,662	52,035	2,720	1,081	2,633	2,602

1) For hay and straw thousand short tons.



## GRAIN AND FLOUR STOCKS AT THE PORTS OF GREAT BRITAIN AND IRELAND 1).

PRODUCTS	First of the month					First of the month				
	Jan. 1933	Dec. 1932	Nov. 1932	Jan. 1932	Jan. 1931	Jan. 1933	Dec. 1932	Nov. 1932	Jan. 1932	Jan. 1931
	1,000 centals					1,000 bushels				
WHEAT:										
Grain . . . . .	3,840	4,080	4,776	13,320	10,872	6,400	6,800	7,960	22,200	18,121
Flour as grain . .	672	480	528	1,008	960	1,120	800	880	1,680	1,600
TOTAL . . . . .	4,512	4,560	5,304	14,328	11,832	7,520	7,600	8,840	23,880	19,721
Barley . . . . .	660	680	760	1,120	1,880	1,375	1,417	1,583	2,333	3,917
Oats . . . . .	432	304	368	448	1,008	1,350	950	1,150	1,400	3,150
Maize . . . . .	2,976	2,544	3,936	5,976	2,064	5,314	4,543	7,029	10,671	3,686

1) Imported cereals.

Authority: *Broomhall's Corn Trade News*.

## STOCKS OF COTTON IN EUROPE.

COUNTRIES, PORTS, DESCRIPTIONS	Thursday or Friday nearest to 1st of month					Thursday or Friday nearest to 1st of month				
	Jan. 1933	Dec. 1932	Nov. 1932	Jan. 1932	Jan. 1931	Jan. 1933	Dec. 1932	Nov. 1932	Jan. 1932	Jan. 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs.)				
Great Britain:										
American . . . . .	2,361	2,087	1,686	2,032	2,651	494	437	353	425	555
Argentine, Brazil- ian, etc. . . . .	162	181	178	206	210	34	38	37	43	44
Peruvian, etc. . .	294	321	330	262	426	61	67	69	55	89
East Indian, etc.	334	212	194	635	288	70	44	40	133	60
Egyptian, Sudan- ese . . . . .	1,281	1,325	1,323	1,309	1,432	268	277	277	274	299
Other 1) . . . . .	77	90	87	179	233	16	19	18	37	49
TOTAL . . . . .	4,509	4,216	3,798	4,623	5,240	943	882	795	967	1,096
Bremen:										
American . . . . .	2,388	2,240	1,843	1,729	2,679	500	469	386	361	560
Other . . . . .	54	65	58	18	72	11	13	12	4	15
TOTAL . . . . .	2,442	2,305	1,901	1,747	2,751	511	482	398	365	575
Le Havre:										
American . . . . .	1,214	1,104	935	863	1,478	254	231	196	181	309
Other . . . . .	40	38	47	117	168	8	8	10	24	35
TOTAL . . . . .	1,254	1,142	982	980	1,646	262	239	206	205	344
Total Continent 2):										
American . . . . .	4,386	4,027	3,395	3,621	4,838	918	843	710	682	1,012
Argentine, Brazil- ian, etc. . . . .	18	29	50	45	154	4	6	10	9	32
E. Indian, Austral- ian, etc. . . . .	88	94	70	95	213	18	19	15	20	45
Egyptian . . . . .	121	111	120	142	121	25	23	25	30	25
W. Indian, W. Afri- can, R. Afri- can, etc. . . . .	28	24	36	32	80	6	5	8	7	17
TOTAL . . . . .	4,641	4,285	3,671	3,575	5,406	971	896	768	748	1,131

1) Includes: W. Indian, etc., E. African, etc.; W. African, and Australian. — 2) Includes Bremen Havre, and other Continental ports.  
Authority: *Liverpool Cotton Ass.*

## STOCKS OF COTTON ON HAND IN THE UNITED-STATES.

LOCATION	Last day of the month					Last day of the month				
	Dec. 1932	Nov. 1932	October 1932	Dec. 1931	Dec. 1930	Dec. 1932	Nov. 1932	October 1932	Dec. 1931	Dec. 1930
	1,000 centals					1,000 bales (counting round as half bales)				
In consuming establishments . . .	7,522	7,162	6,226	8,014	8,013	1,530	1,457	1,267	1,631	1,656
In public storage and at compresses . .	50,917	52,526	48,343	51,293	40,570	10,350	10,677	9,827	10,426	8,376
TOTAL . .	58,439	59,688	54,569	59,307	48,583	11,880	12,134	11,094	12,057	10,032

## STOCKS OF COTTON AT BOMBAY AND AT ALEXANDRIA.

PORTS	Thursday nearest to 1st of month					Thursday nearest to 1st of month				
	Jan. 1933	Dec. 1932	Nov. 1932	Jan. 1932	Jan. 1931	Jan. 1933	Dec. 1932	Nov. 1932	Jan. 1932	Jan. 1931
	1000 centals					1000 bales (1 bale = 478 lbs.)				
Bombay 1) . . . .	2,091	2,001	2,200	1,516	2,548	437	419	460	317	533
Alexandria . . . .	4,214	4,137	3,861	5,587	5,214	882	865	808	1,149	1,091

1) Stocks held by exporters, dealers and mills.

Authorities: East Indian Cotton Ass. and Commission de la Bourse de Minet-el-Bassel.

## IMPORT DUTIES ON CEREALS AND FLOUR

CHANGES TO BE MADE IN THE DUTIES PUBLISHED ON PAGES 160 TO 163 OF THE CROP REPORT FOR FEBRUARY 1932  
(SEE ALSO THE SAME HEADING IN THE CROP REPORTS FOR 1932).

COUNTRY	PRODUCT	Date when enforced	Original data per metric quintal	Data in Amer. cents per bushel or barrel
Denmark . . . . .	Wheat - and rye flour . . . . .	1 Jan., 1933	1)	1)
France . . . . .	Barley . . . . .	31 Dec., 1932	2)	2)
" . . . . .	Maize, small grain, Bessarabian type . . . .	6 Jan., 1933	3)	3)

1) Import subject to special permission of the Currency Control Office (*Valuta-Kontor*) of the Danish National Bank. — 2) Quota for the first quarter of 1933 is limited to 235,000 quintals (1,033,438 bushels). — 3) Reduced tariff valid for quota of 800,000 quintals (3,149,480 bushels), of which 25 % is reserved for agricultural associations. The distribution of this quota during 1933 is as follows: first quarter: 984,213 bush.; second quarter: 590,527 bush.; third quarter: 590,527 bush.; fourth quarter: 984,213 bush. Licences are given by the Ministry of Agriculture.

# MONTHLY REVIEW OF PRICES

(All quotations are, unless otherwise, for spots)

PRODUCTS, MARKETS AND DESCRIPTION	20	13	6	30	23	AVERAGE 1)					Commercial Season	
	Jan.	Jan.	Jan.	Dec.	Dec.	Dec.	Jan.	Jan.				
	1933	1933	1933	1932	1932	1932	1932	1932	1931		1931-32	1930-31
WHEAT.												
Budapest (a): Tisza region (78 kg. p. hl.; pengő p. quintal) . . . . .	...	14.07	13.42	12.80	12.42	12.65	13.33	13.92	12.28	15.34		
Braña: Good quality (lei p. quintal) . . . . .	...	570	570	590	590	599	292	344	305	351		
Winnipeg: No. 1 Manitoba (cents p. 60 lbs.) . . . . .	43 7/8	43 1/8	45 1/8	41 7/8	41 1/8	42 1/8	60 1/8	53 1/8	59 1/8	64 1/8		
Chicago: No. 2 Hard Winter (cents p. 60 lbs.) . . . . .	47 1/8	49 1/8	47 1/8	n. 44 1/8	n. 48 1/8	n. 46 1/8	57 1/8	79 1/8	54 1/8	78		
Minneapolis: No. 1 Northern (cents p. 60 lbs.) . . . . .	48 1/8	49 1/8	48	44 1/8	44 1/8	46 1/8	72 1/8	75 1/8	66 1/8	77 1/8		
New-York: No. 2 Hard Winter (cents p. 60 lbs.) . . . . .	56 1/8	56 1/8	56 1/8	53 1/8	53 1/8	54 1/8	70 1/8	n. q.	66 1/8	n. 91 1/8		
Buenos Aires (b); Barilleta (80 kg. p. hectol.; pesos paper p. quintal) . . . . .	5.60	5.65	5.60	5.35	5.50	5.76	6.26	6.20	6.68	6.83		
Karachi: Karachi white, 2 % barley, 1 1/2 % dirt (rupees p. 656 lbs.) . . . . .	n. q.	n. q.	30-0-0	29-14-0	29-8-0	28-13-7	25-8-0	20-2-10	21-15-9	19-15-2		
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	18.50	18.70	18.60	18.90	18.70	18.92	22.87	25.82	23.63	26.00		
Hamburg, c. i. f. (Reichsmarks p. quintal):												
No. 2 Manitoba . . . . .	8.21	8.55	8.39	7.96	7.87	8.08	10.34	11.39	10.38	12.65		
No. 2 Hard Winter . . . . .	n. q.	8.55	n. q.	n. q.	n. q.	n. q.	10.19	n. q.	9.32	n. 13.00		
Barusso 2) . . . . .	7.19	7.37	7.21	6.86	7.02	7.21	8.46	9.55	8.78	11.10		
Antwerp (francs p. quintal):												
Home grown . . . . .	77.00	77.00	78.00	78.00	77.00	77.00	74.25	82.00	83.10	95.50		
No 2 Hard Winter, Gulf 3) . . . . .	74.00	73.00	72.00	75.00	75.00	74.50	82.25	106.00	81.75	112.50		
Paris: Home-grown, 75-77 kg. (francs p. quintal) . . . . .	107.85	109.75	110.50	111.00	112.50	111.75	167.45	173.10	167.10	175.00		
London: Home grown (shillings p. 504 lbs.) . . . . .	22/9	22/9	22/9	22/9	22/9	23/-	26/-	23/4	26/5	27/1		
London and Liverpool, c. i. f., parcels, shipping current month (shillings p. 480 lbs.) 4):												
South Russian (on sample) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	19/3	22/3	23/7		
No. 3 Manitoba . . . . .	24/-	24 7/8	24 7/8	23/-	22/6	23/7	27/3	n. 23/4	25/9	25/4		
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	27/10	n. q.	25/3	26/4		
White Pacific . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	26/7	26/5	26/7		
Rosafe (afloat) 5) . . . . .	22/3	22/6	22/3	21 1/6	21 1/9	22/6	24/8	19/11	23/8	23/5		
Choice White Karachi . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	27/-		
Australian . . . . .	7) 24/6	25 3	24/6	23 3/4	23/3	24/3	27/3	22/11	25/9	25/7		
Milan (a): Home-grown, soft (lire p. quintal) . . . . .	112.00	112.00	112.00	110.00	110.00	110.00	109.00	104.20	106.20	109.10		
Genoa c. i. f. (shillings p. metric ton): La Plata 6)	n. 1.71	n. 1.72	n. q.	n. 1.63	n. 1.69	n. 1.73	n. q.	93/8	n. 2.21	110/-		
RYE.												
Budapest (a): Home-grown (pengő p. quintal) . . . . .	...	6.15	6.05	5.85	5.80	6.07	13.88	9.78	12.24	10.79		
Berlin: Home-grown (Reichsmarks p. quintal) . . . . .	15.10	15.30	15.30	15.60	15.40	15.40	19.67	15.58	19.00	17.18		
Hamburg, c. i. f. (Reichsmarks p. quintal):												
Russian (72-73 kg. p. hl.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 8.70	n. q.	n. 9.50	n. q.		
La Plata (74-75 kg. p. hl.) . . . . .	n. 5.84	6.05	5.85	5.67	5.84	6.06	8.18	n. q.	8.36	7.65		
Minneapolis: No. 2 (cents p. 56 lbs.) . . . . .	32	33	33	31	30	30 1/4	46 1/4	38	42 1/4	42 1/4		
Groningen (c): Home-grown (florins p. quintal) . . . . .	3.90	3.95	3.95	3.95	3.95	3.93	5.17	4.31	5.13	4.45		
BARLEY.												
Braña: Average quality (lei p. quintal) . . . . .	...	195	182	182	183	187	273	206	263	232		
Winnipeg: No. 4 Western (cents p. 48 lbs.) . . . . .	...	25 1/8	25 1/8	22 1/8	22 1/8	24 1/8	35 1/8	19	34 1/8	26 1/8		
Chicago: Feeding (cents p. 48 lbs.) . . . . .	28	28	24	30	30	27	46 1/8	42 1/8	43 1/8	43 1/8		
Minneapolis: Feeding, slower grades (cents per 48 lbs.) . . . . .	20	22	22	22	22	20 1/8	43 1/8	36 1/8	38 1/8	37 1/8		
Berlin: Home-grown fodder (Reichsmarks per quintal) . . . . .	16.10	16.10	16.10	16.10	16.15	16.24	15.47	19.25	16.41	19.52		
Antwerp: Danubian (francs p. quintal) . . . . .	54.00	53.00	52.50	53.00	55.00	56.50	79.75	66.50	77.25	73.25		
London: English malting (shillings p. 448 lbs.) . . . . .	40/-	40/-	40/-	40/-	40/-	40/-	38/1	37/4	39/4	35/8		
London and Liverpool, c. i. f., parcels (shillings per 400 lbs.):												
Danubian 3 % . . . . .	n. q.	n. q.	n. q.	n. q.	17/9	18/-	n. q.	n. q.	n. q.	15/2		
Russian (Azoff-Black sea) . . . . .	16.6	16 7/8	16/3	15/9	16/9	16/3	22/9	12/7	18/11	14/3		
Canadian Western, N. 3) . . . . .	18/9	19/3	19/3	18/6	18/-	19/-	23/2	14/5	20/11	15/11		
Californian malting (shillings p. 448 lbs.) . . . . .	22/3	22/3	22/9	23/6	23/6	23 8	40/4	26 5/8	33/4	27/8		
Groningen (c): Home grown winter (fl. p. quintal) . . . . .	4.62	4.62	4.62	4.75	4.82	4.83	5.76	4.69	5.87	4.97		

a) Saturday prices. — b) Thursday prices. — c) Prices of preceding Tuesday.

2) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) August-Dec. 1930: 78 Kg. p. hl. Jan. 1931 - Jan. 1932: 79 Kg. p. hl.; afterwards, 80 Kg. p. hl. — 3) From July 1931: No. 1 Hard Winter, Gulf. — 4) German on sample: 20 Jan.: 21/6; 13 Jan.: 22/6; 6 Jan.: 22/6; 30 Dec.: n. q.; 23 Dec.: n. q.; Dec. average: n. 24/- — 5) August-Nov. 1930: 62 1/8 lbs. per bushel; Dec. 1930 - Feb. 1931: 63 1/8 lbs.; March - Nov. 1931: 63 lbs.; Dec. 1931: 63 1/8 lbs.; Jan.-Dec. 1932: 64 lbs.; afterwards 63 1/2 lbs. — 6) From April, 1932: dollars per quintal — 7) New crop. — 8) Without indication of quality — 9) No 1 Hard Winter. — 10) Jan.-Feb. shipment. — 11) 71-72 Kg. p. hl.

PRODUCTS, MARKETS AND DESCRIPTION	20	13	6	30	23	AVERAGE 1)				Commercial Season	
	Jan.	Jan.	Jan.	Dec.	Dec.	Dec.	Jan.	Jan.			
	1933	1933	1933	1932	1932	1932	1932	1931		1931-32	1930-31
<b>OATS.</b>											
Bralla: Good quality (lei p. quintal) . . . . .	...	200	200	175	175	174	317	219		285	247
Winnipeg: No. 2 White (cents per 34 lbs.) . . . . .	...	22 1/4	23	21	20 1/4	21 1/4	29 1/4	25 1/4		31 1/4	30
Chicago: No. 2 White (cents per 32 lbs.) . . . . .	17 1/4	17 1/4	17 1/4	16 1/4	17	16 1/4	26	32 1/4		24 1/4	32 1/4
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	4.00	4.05	4.00	3.70	3.70	3.87	4.50	3.09		5.33	3.58
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	11.25	11.40	11.55	11.75	11.65	11.95	14.05	14.22		15.10	16.17
Paris: Home grown, black and other (francs p. quintal) . . . . .	79.00	79.75	80.40	80.00	82.00	83.20	101.50	74.75		101.75	81.00
London: Home grown white (shillings p. 336 lbs.)	18/-	18/-	18/-	18/-	18/-	18/5	20/10	17/4		21/3	18/4
London and Liverpool c. i. f., parcels (shillings p. 320 lbs.)											
Danubian (39-40 lbs.) . . . . .	n. q.	n. q.	n. q.	13/3	3/-	13/6	n. q.	n. q.		n. q.	n. 12/1
Plate (f. a. q.) . . . . .	12/1 1/2	12/3	12/4 1/2	11/10	11/7 1/2	12/1	14/3	9/2		14/5	10/9
Chilian Tawny . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	17/10	11/3		n. 16/-	12/-
Milan (b): spot (lire p. quintal):											
Home grown . . . . .	67.50	67.50	67.50	67.50	67.50	67.50	76.50	73.50		73.60	73.95
Foreign imported . . . . .	58.00	58.00	61.00	62.00	62.00	61.80	66.60	55.10		65.20	60.40
<b>MAIZE.</b>											
Bralla: Danubian (lei p. quintal) . . . . .	...	170	153	150	152	154	163	199		187	210
Chicago: No. 2 Mixed American (cents p. 36 lbs.)	24 1/4	24 1/4	22	24	24	24	38 1/4	66		34	58 1/4
Buenos Aires (a): Yellow Plate (pesos paper p. quintal) . . . . .	4.35	4.45	4.25	3.95	3.85	3.96	4.17	3.76		4.63	3.82
Antwerp, spot (francs p. quintal):											
Bessarabian . . . . .	53.00	51.00	49.00	n. q.	n. q.	n. q.	n. q.	64.50		n. q.	71.25
Argentine Cinquantino . . . . .	70.00	68.00	67.00	65.00	63.00	64.00	55.50	97.75		63.30	81.00
Yellow Plate . . . . .	55.00	52.00	50.00	49.00	50.00	50.00	52.00	63.50		57.20	65.00
London and Liverpool, parcels, c. i. f. (shillings p. 480 lbs.) 2):											
Danubian . . . . .	18/6	18/9	18/3	17/1 1/2	16/10 1/2	17/7	n. q.	n. q.		n. 19/3	n. 17/4
Yellow Plate . . . . .	18/10 1/2	19/1 1/2	18/3	17/4 1/2	16/10 1/2	17/6	16/11	14/8		18/2	15/6
No. 2 White African . . . . .	18/6	18/6	18/3	17/-	17/9	17/11	21/6	n. q.		n. 20/11	n. 18/1
Milan (b): Home grown (lire p. quintal) . . . . .	57.00	58.00	59.00	59.00	59.00	59.40	63.70	48.70		68.70	51.90
<b>RICE (CLEANED).</b>											
Milan (b): Maratelli (lire p. quintal) . . . . .	139.00	139.00	138.00	138.00	138.00	139.00	145.60	107.70		151.25	117.35
Rangoon: No. 2 Burma (rupees p. 7500 lbs.) . . . . .	n. q.	n. q.	n. q.	217 1/2	220	218	261 1/2	260		268 1/2	249 1/4
Saigon (Indo-chinese piastres p. quintal):											
No. 1 Round white (25 % broken) . . . . .	...	...	...	...	...	...	6.12	7.28		...	6.73
No. 2 Japan (40 % broken) . . . . .	...	...	...	...	...	...	5.69	6.92		...	6.20
London (a): c. i. f. (shillings p. 112 lbs):											
Spanish Belloch, No. 3 oiled . . . . .	13/9	13/9	13/9	n. q.	14/1 1/2	14/2	14/3	11/5		13/8	11/11
Italian good, No. 6 oiled . . . . .	14/-	14/-	14/-	n. q.	14/3	14/2	13/10	11/8		14/-	13/7
American Blue Rose . . . . .	14/9	14/9	14/9	n. q.	16/1 1/2	16/8	20/9	18/5		17/2	18/7
Burma, No. 2 . . . . .	7/1 1/4	7/3	7/1 1/4	n. q.	7/7 1/2	7/1	8/7	8/1		8/4	7/11
Saigon, No. 1 . . . . .	7/4 1/2	7/6	7/3	n. q.	7/7 1/2	7/4	9/7	7/11		8/5	8/1
Siam, Garden, No. 1 3) . . . . .	7/10 1/2	7/9	7/6	n. q.	7/7 1/2	7/9	11/1	10/1		9/5	9/5
Tokio: Various qualities (yens p. koku) . . . . .	23.30	23.90	24.20	n. q.	23.60	22.80	21.62	17.57		21.20	18.46
<b>LINSEED.</b>											
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	9.27	9.30	9.20	9.15	9.15	9.02	9.29	10.46		9.22	10.82
Antwerp: Plate (francs p. quintal) . . . . .	105.00	104.00	101.50	103.00	102.00	102.00	108.50	164.50		103.25	146.00
London, c. i. f. (f. p. long ton):											
La Plata (delivery Hull) . . . . .	8-16-3	9-0-0	8-17-6	9-16-3	9-16-3	8-16-9	8-14-4	8-6-9		8-8-4	8-14-1
Bombay bold . . . . .	11-10-0	11-11-3	11-11-3	11-12-6	11-8-9	11-10-0	11-18-5	12-1-5		11-10-0	11-9-6
Duluth: No. 1 Northern (cents p. 56 lbs.) . . . . .	113	116	115 1/2	113 1/2	107	107 1/2	117 1/2	157 1/2		118 1/2	148

a) Thursday prices. — b) Saturday prices.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) Yellow Russian: 16 Dec.: n. q.; 9 Dec.: n. q.; 2 Dec.: n. q.; 25 Nov.: 18/-; Nov. average: 18/-; White Russian: 16 Dec.: n. q.; 9 Dec.: n. q.; 2 Dec.: 18/6; 25 Nov.: 18/-; Nov. average: 18/2. — 3) From January 1932: Siam Special. — 4) In place of Hull: La Plata. — 5) New crop. — 6) January shipment. — 7) 18 Nov.: 4.28, 11 Nov.: n. q.; 4 Nov.: 4.32; 28 Oct.: 4.45; 21 Oct.: 4.70; Oct. average: 4.67. — 8) 18 Nov.: 4.12, 11 Nov.: n. q.; 4 Nov.: 4.15; 28 Oct.: 4.24; 21 Oct.: 4.40; Oct. average: 4.39. — 9) January-February shipment. — 10) February-March shipment.

PRODUCTS, MARKETS AND DESCRIPTION	AVERAGE 1)								
	20 Jan. 1933	13 Jan. 1933	6 Jan. 1933	30 Dec. 1932	23 Dec. 1932	Dec. 1932	Jan. 1933	Jan. 1933	Commercial Season
									1931-32 1930-31
<b>COTTONSEED.</b>									
Alexandria: Sakellariadis (piastres per ardeb) . . .	74.2	75.0	77.4	74.0	70.3	70.4	58.4	52.5	60.0 52.2
London: Sakellariadis (delivery Hull: 1 <sup>st</sup> p. 1. ton) .	7-10-0	7-12-6	8-0-0	7-17-6	7-12-6	7-10-3	6-0-4	5-15-0	6-3-7 5-12-6
<b>COTTON.</b>									
New Orleans: Middling (cents per lb.) . . . . .	6.15	6.18	6.13	5.95	5.82	5.85	6.51	9.88	6.20 10.07
New York: Middling (cents per lb.) . . . . .	6.25	6.25	6.25	6.10	5.95	5.95	6.69	10.32	6.35 10.38
Bombay: M. g. Broach f. g. (rupees per 784 lbs.) .	200	205	203	201	195	197 <sup>1</sup> / <sub>4</sub>	207	181 <sup>1</sup> / <sub>4</sub>	181 <sup>1</sup> / <sub>4</sub> 191 <sup>1</sup> / <sub>4</sub>
Alexandria (talariis per kantar):									
Sakellariadis f. g. f. . . . .	13.50	13.70	13.75	13.05	12.70	12.84	13.01	14.57	12.17 17.12
Ashmuni (Upper Egypt) f. g. f. . . . .	11.95	12.35	12.47	12.20	11.85	11.91	10.62	11.00	9.73 12.00
Bremen: Middling (U. S. cents per lb.) . . . . .	7.31	7.28	7.27	7.20	6.90	6.99	7.74	11.18	7.44 11.59
M. g. Broach fully good (pence per lb.) . . . .	n. 4.55	n. 4.60	n. 4.55	n. 4.65	n. 4.55	n. 4.70	n. 5.55	n. 4.64	n. 4.48 n. 4.63
Le Havre: Middling, Gulf (francs per 50 kg.) . .	225.00	224.00	222.00	218.00	217.00	217.00	224.00	341.00	216.00 349.00
Liverpool (pence per lb.):									
Middling fair . . . . .	n. 6.40	n. 6.45	n. 6.48	n. 6.44	n. 6.22	n. 6.34	n. 6.44	n. 6.67	n. 5.85 n. 6.93
Middling . . . . .	5.25	5.30	5.33	5.29	5.07	5.19	5.44	5.48	4.79 5.72
São Paulo, good fair . . . . .	n. 5.50	n. 5.55	n. 5.58	n. 5.54	n. 5.32	n. 5.44	5.63	5.77	4.98 5.91
M. g. Broach, fully good . . . . .	n. 4.87	n. 4.91	n. 4.95	n. 4.89	n. 4.68	n. 4.79	n. 5.31	n. 4.07	n. 4.34 n. 4.25
Sakellariadis, fully good fair . . . . .	7.35	7.53	7.56	7.27	7.06	7.06	7.26	8.25	6.76 9.08
<b>BUTTER.</b>									
									1932 1931
Copenhagen (a) Danish (Crs. p. quintal). . . . .	..	150.00	160.00	166.00	176.00	177.60	195.00	220.00	178.70 209.00
Leeuwarden, Commission for the Dutch butter quotations: (florins per kg.) . . . . .	..	0.69	0.71	0.71	0.73	0.73	1.16	1.61	0.94 1.34
Maastricht, auction (b): Dutch (florins p. kg.) . .	1.62	1.56	1.56	1.58	1.60	1.59	1.14	1.62	1.27 1.38
Hamburg, auction (c): Schleswig-Holstein butter, with quality mark (R. M. per 50 kg.) . . . . .	97.44	96.91	96.78	102.09	113.24	111.26	108.35	139.71	115.83 131.22
Kempten (c): Allgäu butter (Pfennige p. half kg.) 2).	87	87	87	100	110	108	98	118 <sup>1</sup> / <sub>2</sub>	106 <sup>1</sup> / <sub>4</sub> 110
London (d) (shillings p. cwt.):									
British blended . . . . .	121/4	121/4	121/4	..	121/4	*) 121/4	133/-	135/4	*) 131/6 140/4
Danish . . . . .	114/-	116/-	120/-	..	127/-	*) 126/3	130/-	140/6	*) 123/1 133/4
Irish creamery, salted . . . . .	n. q.	n. q.	n. q.	..	n. q.	n. q.	n. q.	n. q.	n. 110/- 119/3
Dutch . . . . .	118/-	118/-	120/-	..	120/-	*) 120/-	n. q.	141/2	*) 115/10 132/1
Argentine . . . . .	91/-	91/-	93/-	..	92/-	*) 93/9	108/-	118/-	*) 103/10 117/7
Siberian 3) . . . . .	n. q.	84/-	94/-	..	89/-	*) 89/6	n. q.	n. q.	*) n. 93/6 n. q.
Australian, salted . . . . .	87/-	88/-	90/-	..	90/-	*) 91/3	104/3	118/9	*) 105/8 116/8
New Zealand, salted . . . . .	88/-	89/-	90/-	..	91/-	*) 94/9	106/3	121/6	*) 110/- 119/11
<b>CHEESE.</b>									
Milan (lire per quintal):									
Parmigiano-Reggiano, 1st quality of last year's production . . . . .	1,012.00	1,012.00	1,012.00	1,012.00	987.50	992.00	975.00	1,100.00	1,016.00 1,103.00
Green Gorgonzola, mature, choice . . . . .	580.00	595.00	605.00	605.00	615.00	620.00	508.75	660.00	512.70 616.00
Rome: Roman pecorino, choice (lire p. quintal) .	1,250.00	1,250.00	1,250.00	1,250.00	1,275.00	1,270.00	1,168.00	1,093.00	1,251.00 1,121.00
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheesemark, factory cheese, small; florins p. 50 kg.) . . . . .	..	25.50	26.00	25.00	25.00	25.30	27.62	34.50	24.41 32.63
Gouda: Gouda 45 + (whole milk cheese, with the country's cheesemark, home made, florins p. 50 kg.) . . . . .	..	29.50	29.50	29.50	29.50	31.10	28.75	38.80	26.92 37.93
Kempten (c): (Pfennige per half kg.):									
Soft cheese, green (20 % butterfat). . . . .	18	18	18	19 <sup>1</sup> / <sub>2</sub>	19 <sup>1</sup> / <sub>2</sub>	19 <sup>1</sup> / <sub>2</sub>	20 <sup>1</sup> / <sub>2</sub>	27	21 24
Emmenthal from the Allgäu (whole milk cheese) 1st quality . . . . .	74 <sup>1</sup> / <sub>2</sub>	74 <sup>1</sup> / <sub>2</sub>	74 <sup>1</sup> / <sub>2</sub>	74 <sup>1</sup> / <sub>2</sub>	74 <sup>1</sup> / <sub>2</sub>	74 <sup>1</sup> / <sub>2</sub>	84 <sup>1</sup> / <sub>2</sub>	98 <sup>1</sup> / <sub>2</sub>	81 <sup>1</sup> / <sub>2</sub> 97 <sup>1</sup> / <sub>2</sub>
London (d) (shillings per cwt.):									
English Cheddar . . . . .	107/-	107/-	106/-	..	106/-	*) 106/-	109/6	95/-	*) 109/- 99/10
Canadian . . . . .	73/-	73/-	74/-	..	73/-	*) 73/-	74/-	81 <sup>1</sup> / <sub>2</sub>	*) 72/9 75/9
New Zealand . . . . .	56/6	56/6	56/6	..	60/-	*) 63/4	61/1	63/1	*) 63/2 63/2
Liverpool (d): Engl. Cheshire, ungraded (sh. p. cwt.)	93/4	93/4	93/4	..	91/-	*) 92/2	142/4	93/10	*) 103/11 94/3

a) Thursday prices. — b) Prices of preceding Tuesday. — c) Wednesday prices. — d) Average prices for weeks ending on preceding Wednesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) The method of quotation has been changed as from January 1932; actual prices are generally 3 Pf. higher than according to the former system. — 3) From September 1932: Russian. — 4) Provisionary average.

# QUARTERLY REVIEW OF PRICES 1)

GROUPS	COUNTRIES AND PRODUCTS	AVERAGE						Agricultural year 2)	
		Dec.	Nov.	Oct.	July-Sept.	Oct.-Dec.	Oct.-Dec.	1931-32	1930-31
		1932	1932	1932	1932	1931	1930		

## GERMANY (Prices in Reichsmarks per quintal)

A I	Wheat (Berlin) . . . . .	18.92	19.72	19.72	21.96	21.82	24.14	23.64	26.39
	Rye (Berlin) . . . . .	15.40	15.62	15.52	16.72	19.20	15.15	19.02	17.15
	Barley, feeding (Berlin) . . . . .	16.24	16.50	16.86	16.54	15.79	17.99	16.35	19.64
	Oats (Berlin) . . . . .	11.95	13.17	13.56	14.85	14.34	14.52	15.07	16.28
	Potatoes (Berlin) . . . . .	2.66	2.56	2.66	—	3.25	2.66	3.57	3.29
A II	Milk, fresh (Berlin) . . . . .	13.85	13.85	13.85	13.80	14.40	17.68	15.06	17.62
	Butter (Hamburg) . . . . .	222.52	243.52	239.74	217.40	244.78	290.09	245.35	282.10
	Cheese, Emmental variety (Kempten) 3) . . . . .	159.00	153.50	155.00	164.50	187.50	182.00	180.10	192.00
	Beef, live weight (Berlin) . . . . .	62.50	60.40	58.00	73.03	72.65	111.60	76.06	106.32
	Veal, live weight (Berlin) . . . . .	62.25	73.20	84.00	78.43	87.45	143.33	81.87	126.23
	Pork, live weight (Berlin) . . . . .	76.25	83.20	85.80	87.67	90.05	121.07	87.67	110.44
B I	Basic slag (Aachen) 4) . . . . .	0.225	0.225	0.225	0.225	0.22	0.32	0.23	0.30
	Superphosphate of lime 18 % . . . . .	5.96	5.96	5.96	5.96	6.16	6.48	6.15	6.51
	Potash salts 38-42 % 4) . . . . .	0.170	0.170	0.170	0.168	0.152	0.152	0.159	0.151
	Sulphate of Ammonia 4) . . . . .	0.70	0.70	0.71	0.69	0.72	0.82	0.73	0.83
	Nitrate of lime 4) . . . . .	0.93	0.93	0.93	0.92	0.97	0.99	0.98	1.03
B II	Wheat bran (Hamburg) . . . . .	0.05	8.15	8.36	10.05	9.02	8.14	9.86	9.97
	Linseed cake (Hamburg) . . . . .	9.99	10.22	10.16	10.32	13.05	15.39	12.23	15.39
	Coconut cake (Hamburg) . . . . .	10.08	10.32	10.20	10.36	11.13	12.70	11.30	13.32
	Groundnut cake (Hamburg) . . . . .	10.55	10.87	11.19	11.28	12.40	8.57	11.99	12.50
	Crushed soya extraction residue (Hamburg) . . . . .	9.82	10.25	10.19	10.67	11.13	12.85	11.26	13.44

## DENMARK (Prices in Danish crowns per quintal)

A I	Wheat (Copenhagen) . . . . .	10.40	10.75	10.67	n. 11.25	10.58	11.12	11.92	12.41
	Barley (Copenhagen) . . . . .	11.15	11.25	11.58	n. 12.50	12.94	10.90	13.13	11.18
	Oats (Copenhagen) . . . . .	10.35	10.75	10.50	11.95	12.58	10.83	12.87	11.86
A II	Butter (Copenhagen) . . . . .	177.60	189.50	183.50	174.50	214.65	231.00	192.50	225.00
	Eggs . . . . .	143.00	180.00	141.00	99.00	143.65	176.00	98.00	121.00
	Pork, live weight . . . . .	85.60	77.00	80.50	84.40	72.00	97.00	73.00	98.00
B I	Superphosphate 18 % . . . . .	5.65	5.65	5.55	5.35	5.37	5.79	5.65	5.85
	Potash salts 40 % . . . . .	13.65	13.40	13.27	13.28	12.54	12.71	12.98	12.62
	Sulphate of ammonia . . . . .	13.90	13.60	13.40	12.63	n. q.	16.88	12.18	17.43
	Nitrate of lime, Norwegian . . . . .	13.95	13.65	13.35	13.15	n. q.	16.10	13.73	16.35
	Rye, imported (Jutland) . . . . .	9.00	9.27	9.10	9.69	10.98	8.30	10.31	8.60
B II	Maize, Plate (Jutland) 5) . . . . .	9.21	9.45	9.70	9.53	8.86	9.35	8.64	9.23
	Wheat bran (Copenhagen) . . . . .	8.82	9.00	9.25	9.47	9.11	8.46	9.26	9.12
	Cottonseed cake (Copenhagen) . . . . .	12.77	13.10	13.50	12.82	13.08	14.49	12.18	14.37
	Sunflower-seed cake (Copenhagen) . . . . .	13.42	13.24	12.75	12.24	12.92	13.11	11.50	12.55
	Groundnut cake (Copenhagen) . . . . .	14.90	14.94	15.20	14.92	14.78	12.30	13.99	12.58
	Crushed soya extraction residue (Copenhagen) . . . . .	14.80	14.92	15.02	14.23	13.01	12.69	12.94	13.08

1) Each quarter a list is published for several countries containing prices of plant (A I) and animal (A II) products sold by the farmer, as well as of fertilizers (B I), and of concentrated feeding stuffs for livestock (B II) bought by the farmer. — In the case where the market is not indicated, the price is the average one for the country. — The prices paid to farmers for sugar-beet are generally fixed once a year and therefore are not inserted in these tables. — 2) July to June. — 3) From January 1931 prices of the first quality before that date average prices of all qualities. — 4) Prices per unit contained in one quintal. — 5) Until June, 1931: prices in Copenhagen.

GROUPS	COUNTRIES AND PRODUCTS	AVERAGE							Agricultural year	
		Dec.	Nov.	Oct.	July-Sept.	Oct. Dec.	Oct. Dec.	Oct. Dec.	1931-32	1930-31
		1932	1932	1932	1932	1931	1930	1930		

# FRANCE (Prices in francs per quintal)

A I	Wheat (Paris) . . . . .	111.75	112.80	114.70	134.00	162.35	166.90	167.75	173.90
	Rye (Paris) . . . . .	78.00	80.00	81.00	82.00	97.35	n. q.	99.65	84.60
	Maltng barley (Paris) . . . . .	84.00	88.00	89.00	82.65	98.65	n. 83.80	96.25	92.35
	Oats (Paris) . . . . .	83.20	87.25	86.85	94.70	91.95	74.00	99.35	79.80
A II	Wine, red (southern markets) (hectol.) . . . . .	129.00	126.00	119.00	125.00	86.35	172.00	101.00	154.00
	Beef, dead weight (Paris) . . . . .	609.00	615.00	632.00	673.00	769.00	1,078.00	783.00	1,050.00
	Pork, live weight (Paris) . . . . .	728.00	704.00	712.00	708.00	535.00	695.00	593.00	665.00
	Mutton, dead weight (Paris) . . . . .	1,075.00	1,038.00	1,043.00	1,060.00	1,037.00	1,521.00	1,123.00	1,504.00
B I	Basic slag, 18 % (Lorraine) . . . . .	22.50	22.50	22.50	23.40	23.40	25.20	23.40	24.30
	Superphosphate 14 % (North and East) . . . . .	25.00	25.00	25.00	26.35	28.15	31.40	27.75	31.15
	Sylvinite, minimum 12 % . . . . .	12.50	10.60	10.60	10.60	10.60	10.60	10.60	10.60
	Nitrate of soda (Dunkirk) . . . . .	92.00	95.00	94.00	92.50	105.00	108.00	101.25	109.40
B II	Sulphate of ammonia 20.4 % . . . . .	93.75	96.50	95.50	94.85	104.25	111.50	101.85	112.20
	Linsced cake (North) . . . . .	71.50	70.75	70.75	70.75	84.00	97.00	80.00	103.00
	Cocunut cake (Marseilles) . . . . .	68.00	64.50	67.00	67.00	71.00	70.00	70.00	73.00
	Groundnut cake (Marseilles) . . . . .	69.00	70.00	72.00	72.00	82.00	91.00	78.75	85.00

# GREAT BRITAIN (A: Prices in shillings and pence per cwt;

# B: Prices in pounds sterling, etc. per long ton)

A I	Wheat . . . . .	5/6	5/7	5/10 n.	6/2	6/8	6/10	6/3	6/6
	Fodder barley . . . . .	5/6	5/6	5/10 n.	6/5	6/10	5/8	6/7	5/10
	Oats . . . . .	6/4	6/4	6/7	7/3	7/6	6/1	7/6	6/4
	Potatoes (London) . . . . .	5/-	5/3	5/3	6/2	8/6	5/11	9/10	7/-
A II	Butter (London) . . . . .	2) 121/4	126/-	133/-	134/5	139/-	144/7	136/-	144/9
	Cheese, Cheddar (London) . . . . .	2) 106/-	106/-	100/6	97/2	97/6	96/2	109/-	98/4
	Beef, dead weight (London) . . . . .	n. 66/-	63/-	64/2	71/9	69/3	74/11	76/-	79/2
	Mutton, dead weight (London) . . . . .	n. 73/6	68/10	64/2	65/11	80/8	107/4	84/2	107/10
B I	Pork, dead weight (London) . . . . .	n. 77/6	68/10	67/8	3) 63/4	78/2	112/9	74/4	102/10
	Basic slag 14 % (London) . . . . .	2-3-0	2-3-0	2-3-0	2-3-0	2-2-8	2-3-0	2-1-6	2-2-3
	Superphosphate, 16 % (London) . . . . .	2-16-0	2-16-0	2-16-0	2-16-2	2-15-8	3-6-0	2-17-2	3-3-6
	Kainit 14 % (London) . . . . .	3-6-0	3-5-0	3-4-0	3-2-6	3-0-8	3-1-5	3-3-0	3-1-6
B II	Nitrate of soda, 15 1/2 % (London) . . . . .	8-12-0	8-10-0	8-9-0	8-10-0	8-11-0	9-12-0	8-17-6	9-16-8
	Sulphate of ammonia 20.6 % (London) . . . . .	6-2-0	5-11-0	5-5-0	5-5-0	6-10-0	9-3-0	6-15-11	9-7-2
	Bran, British (London) . . . . .	5-15-3	5-17-7	5-12-9	5-16-7	5-14-6	4-18-8	5-14-10	4-16-4
	Bran maddings, imported (London) . . . . .	5-5-6	5-12-0	5-15-0	5-18-7	5-11-4	4-12-6	5-11-9	4-11-5
	Linsced cake, English (London) . . . . .	8-7-0	8-7-0	8-13-6	8-11-9	8-18-6	9-16-6	8-11-3	9-12-6
	Cottonseed cake (London) . . . . .	5-10-0	5-6-0	5-9-9	5-10-4	5-12-1	4-7-6	5-2-6	4-17-8
	Palm kernel cake (Liverpool) . . . . .	6-2-0	6-2-0	6-2-0	6-1-10	6-7-11	5-7-5	6-11-2	5-9-2

# ITALY (Prices in lire per quintal)

A I	Wheat, soft (Milan) . . . . .	110.00	110.00	114.70	100.45	99.35	110.80	105.65	111.90
	Wheat, hard (Palermo) . . . . .	123.00	124.00	125.00	118.00	131.00	131.08	133.00	135.00
	Oats (Milan) . . . . .	67.50	67.50	67.50	67.85	73.40	76.00	73.30	74.30
	Maize (Milan) . . . . .	59.40	57.25	57.00 n.	71.40	60.05	54.25	64.00	56.30
	Rice (Milan) . . . . .	139.00	143.50	140.35	162.15	136.20	119.65	135.40	125.55
	Hemp, fibre . . . . .	258.00	252.00	252.00	220.00	213.00	256.00	217.00	248.00
	Olive oil (Bari) . . . . .	450.00	440.00	475.00	490.00	537.00	592.00	543.00	580.00
	Wine, ordinary, 11° to 13° (Bari) (hectol.) . . . . .	70.00	75.00	80.00	80.00	90.00	121.00	86.00	118.00

1) September: 647.00 — 2) Provisionary average. — 3) Rectified prices: July: 57/10; August: 61/7. — 4) September: 232.00.

GROUPS	COUNTRIES AND PRODUCTS	AVERAGE						Agricultural year	
		Dec.	Nov.	Oct.	July-Sept.	Oct.-Dec.	Oct.-Dec.	1931-32	1930-31
		1932	1932	1932	1932	1931	1930		

## ITALY (continued)

A II	Cheese (Parmigiano-Reggiano) (Milan) . . . . .	992.00	980.75	959.00	1,050.00	975.00	1,100.00	1,026.00	1,139.00
	Eggs, fresh (Milan) (per 100) . . . . .	54.50	63.40	53.00	36.00	60.20	70.35	40.25	47.00
	Beef, live weight (Milan) . . . . .	300.00	300.00	290.00	280.00	319.00	431.00	321.00	406.00
	Pork, live weight (Milan) 2) . . . . .	444.00	460.00	440.00	383.00	357.00	471.00	363.00	443.00
B I	Basic slag 16-20 % (Chiasso) 4) . . . . .	1.495	1.517	1.525	1.338	1.027	1.37	1.06	1.29
	Superphosphate, mineral, 15-17 % (Genoa) 4) . . . . .	1.195	1.195	1.195	1.195	1.19	1.30	1.19	1.24
	Chloride of potassium (Genoa) . . . . .	66.50	66.50	66.50	64.55	71.50	80.50	72.00	80.25
	Sulphate of ammonia (Genoa) . . . . .	77.50	76.60	75.50	75.60	74.50	86.75	75.40	81.75
	Copper sulphate (Genoa) . . . . .	97.90	102.10	106.00	112.35	137.65	187.00	133.65	182.00
B II	Wheat bran (Genoa) . . . . .	32.80	34.50	34.35	37.75	51.30	45.00	49.30	45.00
	Rice bran (Milan) . . . . .	36.50	36.50	36.50	40.00	39.95	34.40	41.70	36.15
	Linseed cake (Milan) . . . . .	54.00	54.75	56.75	54.10	64.45	65.35	62.15	65.60
	Groundnut cake (Milan) . . . . .	53.90	54.50	55.50	53.10	57.00	54.50	55.15	55.19
	Rapeseed cake (Milan) . . . . .	26.50	26.50	27.50	26.50	32.50	35.70	33.30	36.00

## NETHERLANDS (Prices in guilders per quintal)

A I	Wheat (Groningen) . . . . .	5) . . .	5) . . .	5) . . .	5) . . .	n. 12.50	6.26	n. 12.50	6.94
	Rye (Groningen) . . . . .	3.93	3.83	3.90	4.83	4.76	4.50	5.02	4.49
	Barley (Groningen) . . . . .	4.83	4.84	4.89	4.45	5.73	4.59	5.80	5.00
	Oats (Groningen) . . . . .	4.20	4.46	4.57	5.20	5.65	5.23	5.76	5.30
	Peas (Rotterdam) . . . . .	14.75	14.35	13.75	11.98	12.60	10.02	11.40	9.40
	Flax, fibre (Rotterdam) . . . . .	45.00	44.50	47.00	48.00	56.50	67.00	52.55	60.80
	Potatoes (Amsterdam) . . . . .	2.66	2.66	2.60	n. 3.50	4.03	4.00	3.97	5.03
A II	Butter (Leeuwarden) . . . . .	73.00	81.00	82.00	85.35	119.65	158.00	115.00	153.00
	Butter (Maasricht) . . . . .	159.00	156.00	152.00	133.65	120.35	163.00	118.00	157.00
	Cheese, Gouda 45 % (Gouda) . . . . .	62.20	66.00	63.00	50.85	69.43	88.60	62.88	83.09
	Cheese, Edam 40 % (Alkmaar) . . . . .	50.60	58.50	54.00	41.90	52.67	77.63	56.26	74.44
	Eggs (Roermond) (per 100) . . . . .	5.21	6.65	5.50	3.79	6.18	8.57	4.52	6.26
	Beef, dead weight (Rotterdam) . . . . .	62.50	63.00	63.00	66.67	74.20	103.00	76.70	100.00
	Pork, live weight (Rotterdam) . . . . .	30.00	30.00	29.00	28.83	41.00	54.00	35.35	49.00
B I	Basic slag 4) . . . . .	0.146	0.140	0.138	0.116	0.103	0.153	0.097	0.144
	Superphosphate 17 % . . . . .	1.96	1.95	1.95	1.90	2.22	2.79	2.15	2.68
	Kainit 4) . . . . .	0.148	0.148	0.148	0.144	0.152	0.152	0.144	0.150
	Nitrate of soda . . . . .	6.47	6.52	6.55	6.71	7.85	n. 10.40	7.82	10.48
	Sulphate of ammonia 20 1/2 % . . . . .	4.59	4.59	4.61	4.38	4.70	n. 9.75	4.45	9.62
B II	Maize (Rotterdam) . . . . .	3.35	3.60	3.75	3.95	3.69	5.09	3.89	5.43
	Linseed cake, Dutch . . . . .	5.89	5.82	5.86	6.00	7.09	8.90	6.85	9.05
	Coconut cake . . . . .	6.21	6.16	6.27	6.28	6.85	7.40	6.81	7.88
	Groundnut cake . . . . .	6.26	6.33	6.60	6.57	7.49	7.08	7.20	7.43

## POLAND (Prices in zlotys per quintal)

A I	Wheat (Warsaw) . . . . .	25.28	26.80	26.00	26.40	26.42	27.65	27.48	31.17
	Rye (Warsaw) . . . . .	15.10	16.10	16.40	18.30	25.43	19.01	25.56	21.33
	Barley (Warsaw) . . . . .	16.20	17.30	18.00	18.20	26.28	25.29	24.42	25.55
	Oats (Warsaw) . . . . .	14.90	16.53	17.10	19.30	24.20	22.01	24.36	24.01
A II	Butter (Warsaw) . . . . .	357.40	384.00	394.00	334.00	428.00	526.00	397.00	486.00
	Beef, live weight (Warsaw) . . . . .	62.60	67.00	69.00	75.65	74.65	113.00	77.55	103.00
	Pork, live weight (Warsaw) . . . . .	95.00	100.00	106.00	113.67	109.50	167.00	124.30	152.00
	Eggs (Warsaw) (per 100) . . . . .	13.97	13.57	10.07	7.82	14.10	20.27	10.87	14.25
B I	Superphosphate . . . . .	0.62	0.62	0.62	0.62	0.64	0.90	0.55	0.83
	Potash salts 25 % . . . . .	12.50	12.50	13.75	13.75	13.75	13.75	13.75	13.75
	Sulphate of ammonia . . . . .	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
B II	Wheat bran (Warsaw) . . . . .	9.45	10.19	10.62	12.38	15.73	17.48	15.62	16.52
	Rye bran (Warsaw) . . . . .	8.90	9.62	9.00	10.37	15.82	14.38	15.03	14.15
	Linseed cake (Warsaw) . . . . .	20.55	21.75	19.85	20.00	27.10	44.85	24.77	31.40
	Rapeseed cake (Warsaw) . . . . .	15.95	16.75	16.60	16.45	19.80	33.48	18.71	21.90

1) Rectified prices: Sept.: 44.25; August: 35.10. — 2) Partly revised. — 3) Rectified prices: Sept.: 375.00; August: 372.00; July: 402.00  
 — 4) Prices per unit contained in one quintal. — 5) See note on the wheat prices in Netherlands (page 75).



GROUPS	COUNTRIES AND PRODUCTS	AVERAGE						Agricultural year	
		Dec.	Nov.	Oct.	July-Sept.	Oct. Dec.	Oct. Dec.	1931-32	1930-31
		1932	1932	1932	1932	1931	1930		

SWEDEN (Prices in Swedish crowns per quintal)

A I	Wheat . . . . .	16.45	16.79	16.72	17.07	16.92	18.95	17.84	19.43
	Rye . . . . .	15.25	15.38	15.09	15.26	15.85	15.95	16.14	16.33
	Barley . . . . .	10.95	10.83	11.12	11.98	11.78	11.60	12.36	12.25
	Oats . . . . .	8.45	8.65	9.17	n. 10.40	9.78	9.03	10.40	10.18
A II	Beef, live weight (Göteborg) . . . . .	31.50	31.90	33.50	34.70	40.67	56.00	38.65	52.00
	Pork, live weight (Göteborg) . . . . .	59.90	60.00	65.00	65.00	50.91	68.00	51.15	65.00
	Butter (Malmö) . . . . .	1) 190.00	1) 216.25	174.40	167.50	200.75	214.00	184.00	210.00
	Eggs (Stockholm) . . . . .	124.00	169.00	124.00	88.07	146.50	232.00	95.00	144.00
B I	Superphosphate 20 % . . . . .	n. 6.45	n. 6.45	n. 6.45	6.92	n. q.	7.48	7.36	7.75
	Potash salts, 20 % . . . . .	n. 8.10	n. 8.10	n. 8.10	7.98	n. q.	7.87	7.78	7.92
	Chilisaipeter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	18.17	18.65	18.59
	Calcium cyanamide . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	16.47	18.10
B II	Malze, La Plata . . . . .	9.51	9.89	10.02	10.09	9.19	10.08	9.12	10.07
	Wheat bran . . . . .	9.37	9.67	9.64	9.52	9.55	8.65	9.88	9.55
	Groundnut cake . . . . .	15.56	15.96	16.40	15.97	14.82	13.18	14.70	13.47
	Cottonseed cake . . . . .	12.08	12.31	12.45	11.94	12.18	12.47	12.25	12.80
	Soya meal . . . . .	2) 14.92	2) 15.20	2) 15.32	2) 14.70	13.90	13.62	14.25	14.08

CZECHOSLOVAKIA (Prices in Czech. crowns per quintal)

A I	Wheat . . . . .	153.00	149.50	151.50	150.15	146.30	138.00	148.00	149.00
	Rye . . . . .	101.50	107.00	107.00	120.00	150.15	89.00	145.70	108.00
	Barley . . . . .	79.00	82.00	83.00	90.65	121.80	120.00	116.50	134.00
	Oats . . . . .	75.00	78.50	81.50	89.85	115.30	100.00	119.90	118.00
	Edible potatoes . . . . .	27.00	26.50	26.00	35.00	24.65	28.00	34.60	42.85
	Hops . . . . .	1,960.00	1,800.00	1,519.00	858.00	687.00	787.00	559.00	934.00
A II	Butter . . . . .	2,050.00	2,150.00	2,300.00	2,242.00	1,983.00	2,033.00	2,158.00	2,179.00
	Fresh eggs (per 100) . . . . .	95.85	84.15	67.50	59.40	73.65	93.75	88.25	74.10
	Beef, dead weight . . . . .	875.00	900.00	850.00	758.00	875.00	1,047.00	844.00	981.00
	Veal, dead weight . . . . .	700.00	925.00	825.00	733.00	760.00	1,058.00	769.00	981.00
	Pork, dead weight . . . . .	1,052.00	1,175.00	1,175.00	1,025.00	929.00	1,087.00	914.00	1,014.00
B I	Basic slag, 15 % . . . . .	34.85	34.85	34.85	34.85	35.18	39.28	35.05	39.20
	Superphosphate, 16 to 18 % . . . . .	51.85	51.85	51.85	51.85	51.85	51.85	51.85	52.85
	Kainit, 14 % . . . . .	22.10	20.15	22.10	21.72	21.74	23.00	22.00	23.10
	Chile salpeter . . . . .	n. q.	n. q.	n. q.	n. q.	142.03	165.50	149.75	165.15
	Sulfate of ammonia, 20 1/2 % . . . . .	123.60	123.40	127.60	125.20	124.42	140.00	128.20	139.65
B II	Malze, imported . . . . .	71.75	72.25	72.75	65.00	65.15	78.00	64.10	79.45
	Wheat bran (Prague) . . . . .	53.90	57.85	60.50	67.95	78.25	69.00	77.25	79.00
	Rye bran (Prague) . . . . .	53.90	57.85	60.50	69.35	80.30	62.00	79.00	75.00
	Crushed soya (Prague) . . . . .	n. q.	n. q.	n. q.	107.10	115.60	128.00	113.25	133.00
	Rapeseed cake (Prague) . . . . .	96.10	99.75	101.00	101.00	98.50	91.00	100.00	99.00
	Linseed cake (Prague) . . . . .	3) 97.50	108.80	114.00	114.25	125.15	136.00	123.00	137.00
	Groundnut cake (Prague) . . . . .	4) 106.70	108.50	109.50	111.25	129.90	117.00	122.00	125.00

1) Price for all Sweden; quality butter; with mark, c. i. f. place of consumption or port of export. — 2) Quality slightly different. — 3) Price at Lovosice. — 4) Price at Střekov.

PRICE OF WHEAT IN THE NETHERLANDS. — In connection with the *Tarwecrisiswet* (wheat crisis law) a central organization is charged with the purchase of all home-grown wheat. The millers are obliged to cover their needs for home-grown wheat by purchase from this organization since they must employ in the production of bread flour homegrown wheat in the proportion of 25 %, for which they pay on the average 15 florins a quintal. As the 1932 crop exceeds millers requirements the above-mentioned central organization sells the remainder on the open market. The average monthly prices obtained by it for B quality (which is utilized for poultry-feeding in the five months of 1932 during which sales of this wheat took place were as follows in florins per quintal: August 4.55, September 4.97, October 4.42, November 4.46 and December 4.91.

The central organization pays to the growers a weighted average price taking into account the quality supplied by each.

## THE TREND OF PRICES OF AGRICULTURAL PRODUCTS

In the following pages the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

But in addition to the original data summary tables are given below.

### *Quarterly general index-numbers of prices of agricultural products.*

(Base: first quarter of 1929 = 100).

COUNTRIES	1930	1931				1932			
	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Germany . . . . .	83.1	79.9	81.4	77.5	73.0	70.9	70.2	68.2	65.1
England and Wales . . . . .	88.9	87.5	85.4	83.8	79.2	81.2	79.2	72.9	70.1
Estonia . . . . .	67.7	63.7	63.9	62.8	56.7	52.8	49.3	47.3	50.0
Finland . . . . .	69.2	69.2	66.7	64.5	67.3	72.6	67.3	67.3	68.2
Hungary . . . . .	59.7	60.4	62.4	64.2	66.4	57.2	62.7	61.4	53.0
Italy . . . . .	69.5	63.7	65.1	61.4	62.4	64.5	65.4	60.1	60.0
Netherlands . . . . .	68.9	77.1	78.2	70.7	61.1	67.9	54.6	53.6	53.6
Poland . . . . .	70.9	64.0	71.4	63.4	63.3	58.7	63.7	54.4	51.3
Argentina . . . . .	67.5	60.6	59.6	59.7	63.4	58.1	56.6	58.4	52.9
Canada . . . . .	68.6	61.9	60.2	55.6	55.8	53.2	50.8	48.9	45.0
United States . . . . .	75.0	67.6	63.7	55.4	50.2	44.9	41.2	42.8	39.5
United States . . . . .	74.5	67.3	63.7	59.3	54.4	48.3	44.5	45.9	43.3

a) Bureau of Agricultural Economics. — b) Bureau of Labor.

### *Variations in the index-numbers for December, 1932.*

COUNTRIES	Percentage variations			
	compared with those for November, 1932		compared with those for December, 1931	
	Index-numbers of prices of agricultural products	General index-numbers of prices	Index-numbers of prices of agricultural products	General index-numbers of prices
Germany . . . . .	— 3.9	— 1.6	— 10.7	— 10.9
England and Wales . . . . .	+ 2.0	— 0.2	— 12.0	— 9.1
Argentina . . . . .	— 5.8	—	— 15.5	—
Canada . . . . .	— 3.4	— 1.2	— 19.4	— 9.0
Estonia . . . . .	— 3.9	—	— 8.6	—
United States . . . . .	— 3.7	—	— 21.2	—
United States . . . . .	— 5.6	— 2.0	— 20.8	— 5.6
Finland . . . . .	— 2.7	— 1.1	— 7.7	— 2.2
Hungary . . . . .	— 1.4	— 1.2	— 23.6	— 18.2
Italy . . . . .	— 1.4	— 1.0	— 5.7	— 8.2
New Zealand . . . . .	— 4.9	—	— 16.8	—
Netherlands . . . . .	— 5.9	—	— 11.1	—
Poland . . . . .	— 6.9	— 3.9	— 21.7	— 15.4
Yugoslavia . . . . .	+ 3.2	+ 0.2	— 12.7	—
Yugoslavia . . . . .	— 4.8	—	— 2.2	— 3.6

a) Bureau of Agricultural Economics. — b) Bureau of Labor. — c) Products of the soil — d) Animal products.

# INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER \*

COUNTRIES AND CLASSIFICATIONS	Dec	Nov.	Oct.	Sept.	August	July	Dec.	Dec.	Year	
	1932	1932	1932	1932	1932	1932	1931	1930	1932	1931
									1)	
<b>GERMANY</b>										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of vegetable origin . . . . .	96.6	99.1	100.3	104.2	118.6	116.6	112.8	111.3	112.0	119.3
Livestock . . . . .	60.6	63.5	66.2	67.5	71.5	66.7	68.4	104.4	65.5	83.0
Livestock products . . . . .	96.9	103.4	98.7	94.8	90.3	89.4	101.1	126.6	93.9	108.4
Feeding stuffs . . . . .	83.2	84.4	85.2	77.1	90.5	94.2	93.6	91.1	91.6	101.9
Total agricultural products . . . . .	84.4	87.8	88.0	89.0	91.0	92.5	94.5	110.4	91.3	103.8
Fertilizers 2) . . . . .	70.2	69.8	69.4	69.2	68.5	67.7	70.4	80.5	—	76.5
Agricultural dead stock . . . . .	113.1	113.6	113.9	114.2	115.1	115.5	128.3	136.0	116.1	130.7
Finished manufactures (*Gebrauchsgüter*) . . . . .	112.0	112.5	113.0	113.8	114.3	116.0	132.4	148.8	117.5	140.1
General index-number . . . . .	92.4	93.9	94.3	95.1	95.4	95.9	103.7	117.8	96.5	110.9
<b>ENGLAND AND WALES</b>										
(Ministry of Agriculture)										
Average of corresponding months										
1911-13 = 100.										
Agricultural products . . . . .	103	101	100	104	105	106	117	126	109	120
Feeding stuffs . . . . .	90	90	89	92	97	94	93	81	95	83
Fertilizers . . . . .	89	88	87	87	89	89	91	101	90	96
General index-number 3) . . . . .	91.4	91.6	91.5	94.6	94.9	92.8	100.5	102.2	94.9	96.5
<b>ARGENTINA 3)</b>										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed . . . . .	52.2	55.5	60.0	64.1	62.9	60.4	58.2	56.6	59.5	55.8
Wheat . . . . .	56.8	60.9	65.3	68.3	70.1	71.5	80.4	99.5	60.8	94.3
Hides and skins . . . . .	51.4	54.7	54.6	61.7	52.8	47.7	59.1	65.6	53.1	64.5
Wool . . . . .	36.8	40.7	45.2	48.0	43.1	43.0	51.7	51.8	44.2	61.2
Dairy products . . . . .	53.3	53.7	53.7	56.2	57.3	57.3	66.6	68.7	56.9	74.5
Forest products . . . . .	68.5	64.9	65.2	62.5	61.6	63.3	80.5	108.7	68.4	99.3
Total agricultural products . . . . .	51.9	55.1	59.0	62.7	61.1	59.2	61.4	65.3	59.1	63.8
<b>CANADA</b>										
(Internal Trade Branch										
of the Dominion Bureau of Statistics)										
1926 = 100.										
Field products (grain, etc.) . . . . .	33.6	36.6	36.8	38.9	41.7	41.8	42.2	43.1	40.7	44.6
Animals and animal products . . . . .	57.8	56.9	58.4	60.2	59.3	58.3	71.1	93.1	60.9	77.6
Total Canadian farm products . . . . .	42.7	42.2	44.9	46.9	48.3	48.0	53.0	61.8	48.3	57.0
Fertilizers . . . . .	72.3	72.3	72.3	72.0	72.4	72.0	71.1	89.2	71.8	83.0
Consumer's goods (other than foodstuffs, etc.) . . . . .	78.2	78.3	78.6	78.9	78.6	78.5	79.9	84.6	78.8	80.5
General index-number . . . . .	64.0	64.8	65.0	66.9	66.8	66.6	70.3	77.7	67.0	72.2
<b>ESTONIA</b>										
(Central Bureau of Statistics)										
1913 = 100.										
Commodities imported 4) . . . . .	111	112	112	112	113	115	125	123	113	129
Commodities exported . . . . .	59	63	57	54	51	53	64	84	58	76
Agricultural products imported and exported 4) . . . . .	74	77	72	70	67	70	81	96	74	91

\* For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication "Index Numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer" (Rome, 1930), as well as to pages 77 to 79 of the "Crop Report" of January 1932 and to page 517 of the "Crop Report" of July 1932.

1) Most data for 1932 are provisional. — 2) From July 1932 new series — 3) Calculated by the "Statist", reduced to base-year 1913 = 100. — 4) From January 1932 the price of rye is excluded from the calculations.

COUNTRIES AND CLASSIFICATIONS	Dec.	Nov.	Oct.	Sept.	August	July	Dec.	Dec.	Year	
	1932	1932	1932	1932	1932	1932	1931	1930	1932	1931
									1)	1931
<b>UNITED STATES</b>										
(Bureau of Agricultural Economics)										
Average 1909-10 to 1913-14 = 100.										
Cereals . . . . .	33	34	36	41	43	42	52	80	44	63
Fruits and vegetables . . . . .	59	57	59	68	79	83	68	108	71	98
Meat animals . . . . .	52	57	60	67	69	72	68	112	63	93
Dairy products . . . . .	69	68	68	67	65	63	92	117	70	94
Poultry and poultry products . . . . .	121	115	102	84	75	65	120	127	80	96
Cotton and cottonseed . . . . .	43	47	51	57	51	41	45	73	46	63
Total agricultural products . . . . .	52	54	56	59	59	57	66	97	57	80
Commodities purchased by farmers 2) . . . . .	106	106	107	106	108	109	123	139	111	129
Agricultural wages 2) . . . . .	—	—	84	—	—	...	98	129	...	116
<b>UNITED STATES</b>										
(Bureau of Labor)										
1926 = 100.										
Grains . . . . .	31.7	33.2	34.4	37.4	38.2	36.7	47.0	64.0	39.4	53.0
Livestock and poultry . . . . .	38.7	41.9	45.0	51.2	52.8	54.1	51.7	76.3	48.3	63.9
Other farm products . . . . .	51.3	53.9	52.1	52.1	50.8	48.4	61.2	78.1	51.4	69.2
Total farm products . . . . .	44.1	46.7	46.9	49.1	49.1	47.9	55.7	75.2	48.2	64.8
Agricultural implements . . . . .	84.5	84.6	84.7	84.9	84.9	84.9	92.1	94.9	84.9	94.0
Fertilizer materials . . . . .	63.1	63.5	63.4	63.6	66.4	66.8	70.1	81.4	66.9	76.8
Mixed fertilizers . . . . .	65.6	65.6	66.5	66.9	68.3	68.8	77.1	90.6	69.4	82.0
Cattle feed . . . . .	37.1	40.8	42.7	45.9	47.4	42.2	53.9	78.2	45.9	62.7
Non-agricultural commodities . . . . .	66.5	67.5	68.1	68.7	68.5	68.0	69.3	79.4	68.4	73.0
General index-number . . . . .	62.6	63.9	64.4	65.3	65.2	64.5	66.3	78.4	64.9	71.1
<b>FINLAND</b>										
(Central Bureau of Statistics)										
1926 = 100.										
Cereals . . . . .	89	90	89	87	86	88	93	72	90	77
Potatoes . . . . .	71	69	68	68	71	93	54	59	71	68
Fodder . . . . .	66	67	67	65	66	67	71	58	69	63
Meat . . . . .	57	54	56	61	64	65	57	72	61	64
Dairy products . . . . .	77	80	76	74	71	73	92	74	76	76
Total agricultural products . . . . .	72	74	72	72	72	73	78	73	74	72
General index-number . . . . .	90	91	90	90	89	89	92	86	90	84
<b>HUNGARY</b>										
(Central Bureau of Statistics)										
1913 = 100.										
Agricultural and livestock products . . . . .	68	69	75	80	80	87	89	78	—	—
General index-number . . . . .	81	82	80	90	89	94	99	90	—	—
<b>ITALY</b>										
(Consiglio Provinciale dell'Economia Corporativa di Milano)										
1913 = 100.										
National agricultural products . . . . .	322.97	327.61	326.81	328.66	322.08	328.78	342.35	356.88	339.63	343.11
General index-number . . . . .	298.95	301.89	304.33	306.70	300.06	299.93	325.54	368.63	309.91	341.57
<b>NEW ZEALAND</b>										
(Census and Statistics Office)										
Average 1909-13 = 100.										
Dairy produce . . . . .	83.9	94.5	102.4	96.6	95.5	89.4	97.6	—	93.8	98.9
Meat . . . . .	108.7	100.3	95.5	100.0	109.0	106.6	138.3	—	109.1	130.1
Wool . . . . .	52.7	60.0	66.8	66.4	57.8	55.5	61.5	—	61.3	67.9
Other pastoral produce . . . . .	61.7	62.0	63.1	53.4	57.9	59.0	72.9	—	62.2	76.7
All pastoral and dairy produce . . . . .	79.9	84.2	88.1	86.0	85.8	82.2	96.0	—	86.4	96.5
Agricultural produce . . . . .	96.8	95.6	95.4	95.7	83.1	84.8	118.9	—	101.7	115.5
All pastoral, dairy and agricultural produce . . . . .	80.4	84.5	88.3	86.2	85.7	82.3	96.6	—	86.8	97.0

1) Most data for 1932 are provisional. — 2) 1910-14 = 100. — 3) January.

COUNTRIES AND CLASSIFICATIONS	Dec. 1932	Nov. 1932	Oct. 1932	Sept. 1932	August 1932	July 1932	Dec. 1931	Dec. 1930	Year	
									1932	1931
<b>NORWAY 1)</b>										
(Kgl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals . . . . .	116	116	116	118	118	124	108	99	125	112
Potatoes . . . . .	75	72	75	73	86	144	126	158	130	150
Fork . . . . .	98	95	100	94	87	90	90	98	96	86
Other meat . . . . .	106	101	105	109	115	117	126	193	218	138
Eggs . . . . .	111	142	120	109	85	78	114	146	108	96
Dairy products . . . . .	128	131	131	132	125	123	136	150	156	129
Concentrated feeding stuffs . . . . .	103	104	104	106	107	105	108	111	121	103
Maize . . . . .	87	91	92	95	94	90	85	93	108	82
Fertilizers . . . . .	89	87	81	89	89	89	86	95	105	90
<b>NETHERLANDS</b>										
(Directie van den Landbouw)										
Average 1924-25 to 1928-29 = 100.										
Products of the soil . . . . .	41	43	44	46	49	51	57	59	2) 58	2) 72
Animal products . . . . .	50	55	55	51	49	52	53	74	2) 57	2) 77
Total agricultural products . . . . .	48	51	52	50	49	52	54	71	2) 57	2) 76
Agricultural wages . . . . .	83	83	83	83	83	83	95	100	2) 93	2) 99
General index-number 3) . . . . .	...	52.1	52.1	51.4	50.7	51.4	57.4	72.4	77.8	65.7
<b>POLAND 4)</b>										
(Central Bureau of Statistics)										
1917 = 100.										
Products of the soil . . . . .	38.8	40.8	41.8	42.7	43.7	47.3	58.0	46.4	49.8	53.9
Products of agricultural industry . . . . .	51.1	52.7	53.8	55.2	59.1	61.2	66.2	63.6	61.3	65.9
Total products of plant origin . . . . .	44.8	46.7	47.8	48.9	51.2	54.2	62.4	54.6	55.6	60.0
Animals . . . . .	37.6	39.2	41.4	43.7	45.6	45.6	41.3	68.6	43.1	55.8
Dairy products . . . . .	55.4	67.1	53.5	55.8	47.7	50.8	68.0	91.9	55.4	68.0
Total products of animal origin . . . . .	44.9	50.1	46.7	49.0	46.8	48.2	51.8	78.2	48.2	60.8
Total agricultural products . . . . .	44.8	48.1	47.3	48.9	48.9	51.2	57.2	63.2	52.0	59.7
Fertilizers . . . . .	107.6	107.6	112.9	112.9	112.9	112.9	108.4	124.7	105.5	120.2
Industrial products . . . . .	65.8	67.1	68.5	69.7	69.7	67.7	74.0	86.9	69.6	79.4
General index-number . . . . .	56.2	58.5	58.8	60.2	60.2	60.4	66.4	76.2	61.6	70.5
<b>YUGOSLAVIA</b>										
(National Bank of the Kingdom of Yugoslavia)										
1926 = 100.										
Products of the soil . . . . .	61.6	59.7	58.1	57.7	64.0	73.2	70.6	72.5	67.5	96.7
Animal products . . . . .	57.3	60.2	58.5	56.8	53.6	57.2	58.6	86.4	56.6	97.7
Industrial products . . . . .	68.1	67.6	67.5	64.0	63.4	63.4	68.5	75.2	66.2	80.2
General index-number . . . . .	64.8	64.7	63.9	61.8	62.6	65.6	67.2	78.0	65.2	88.8

1) The agricultural years refer to the period April 1-March 31. — 2) Agricultural year July 1-June 30. — 3) Calculated by the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100. — 4) Average data for the year 1932 are provisional.

# RATES OF FREIGHT

(Rates for full cargoes)

VOYAGES	20	13	6	30	23	AVERAGE				
	Jan.	Jan.	Jan.	Dec.	Dec.	Dec.	Jan.	Jan.	Commercial Season	
	1933	1933	1933	1932	1932	1932	1932	1931		
SHIPMENTS OF WHEAT AND MAIZE.										
Danube to Antwerp/Hamburg . . . (shill. per long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	n. 13/7	n. q.	n. q.	14/6	13/11
Black Sea to Antwerp/Hamburg . .	11/-	11/-	11/-	10/3	10/3	10/11 1/2	11/3	10/11	10/10	10/10
St. John to Liverpool 1) . . . . .	1/6	1/6	1/6	1/9	1/9	1/10 1/2	1/6	1/6	1/7	1/6
Port Churchill to United Kingdom .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	—	—	—	—
Montreal to United Kingdom . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	0.08	1/10
Gulf to United Kingdom . . . . . (shill. per 480 lbs.)	2/-	2/-	2/-	2/-	2/-	2/-	2/3	1/9	2/6	2/3
New York to Liverpool 1) . . . . .	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/8	1/6
Northern Range to U. K./Continent.	n. q.	n. q.	0.06 1/4	0.06 1/4	n. q.	n. 0.06	n. 1/7 1/2	1/8	0.09	1/9
North Pacific to United Kingdom (sh. per long ton)	23/6	23/6	23/6	n. 23/-	n. 23/-	n. 22/10	n. 22/3	22/6	n. 22/2	22/3
Vancouver to Yokohama 1) (gold \$ per sh. ton).	2.25	2.25	2.25	2.00	2.00	2.00	2.45	2.78	2.30	2.72
La Plata Down River 2) to U. K./Continent.	16/6	16/-	15/9	15/9	15/9	16/1	17/1	16/2	16/-	16/4
La Plata Up River 3) to U. K./Continent..	(shill. per long ton)	18/-	17/3	17/3	17/3	17/6	18/3	18/-	17/6	18/-
Karachi to U. K./Continent 4) . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	20/9	n. q.	19/3
Western Australia to U. K./Continent . . . . .	27/-	28/-	28/-	27/-	27/-	27/3	27/7	30/2	26/-	29/8
SHIPMENTS OF RICE.										
Salgon to Europe . . . . . (shill. per long ton)	26/-	27/-	27/-	n. q.	n. q.	n. q.	25/1	n. 23/6	23/5	24/3
Burma to U. K./Continent. . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	25/4	23/-	n. 23/5	23/9

1) Rates for parcels by liners. — 2) "Down River" includes the ports of Buenos Aires and La Plata. — 3) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine, Santa-Fé and Paraná) are subject to an extra rate of freight. — 4) The original data being quoted in "scale terms", 10 % is added to arrive at rates per long ton. — 5) Freight in gold \$ per 100 lbs. (in the case of a loss of 25 % in the value of the shilling, 10 \$ c. per 100 lbs. are equal to 2/8 per quarter).

## EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT OF THEIR PARITY WITH THE DOLLAR

COUNTRY	Exchange	Exchange rates					Percentage bonus (+) or loss (-) (1)				
		20	13	6	30	23	20	13	6	30	23
		Jan. 1933	Jan. 1933	Jan. 1933	Dec. 1932	Dec. 1932	Jan. 1933	Jan. 1933	Jan. 1933	Dec. 1932	Dec. 1932
Germany a) . . . . .	Berlin	4.213	4.213	4.213	4.213	4.213	— 0.4	— 0.4	— 0.4	— 0.4	— 0.4
Argentina b) . . . . .	New York	25.75	25.75	25.75	25.75	25.75	— 39.3	— 39.3	— 39.3	— 39.3	— 39.3
Belgium a) . . . . .	Brussels	7.207	7.217	7.218	7.229	7.229	— 0.3	— 0.3	— 0.4	— 0.5	— 0.5
Canada b) . . . . .	New York	87.500	88.312	88.562	87.708	87.750	— 11.7	— 11.7	— 11.4	— 12.3	— 12.3
Denmark a) . . . . .	Copenhagen	5.957	5.960	5.790	5.845	5.827	— 37.4	— 37.4	— 35.6	— 36.2	— 36.0
Egypt . . . . .											
Great Britain b) . . . . .	London 2)	16.765	16.728	16.715	16.528	16.656	— 31.3	— 31.3	— 31.3	— 32.1	— 31.6
France a) . . . . .											
Indo-China . . . . .	Paris 3)	25.635	25.630	25.620	25.625	25.625	— 0.4	— 0.4	— 0.4	— 0.4	— 0.4
Hungary a) . . . . .	Budapest	5.72	5.72	5.72	5.72	5.72	— 0.0	— 0.0	— 0.0	— 0.0	— 0.0
India b) 4) . . . . .	London	25.32	25.36	25.34	25.05	25.25	— 30.5	— 30.5	— 30.6	— 31.4	— 30.8
Italy a) . . . . .	Milan	19.53	19.52	19.52	19.52	19.52	— 2.7	— 2.7	— 2.7	— 2.7	— 2.7
Japan b) . . . . .	New York	21.00	20.81	20.60	20.68	21.37	— 58.3	— 58.3	— 58.7	— 58.5	— 57.1
Netherlands a) . . . . .	Amsterdam	2.489	2.491	2.488	2.489	2.490	— 0.1	— 0.1	— 0.0	— 0.1	— 0.1
Poland a) . . . . .	Warsaw	8.928	8.928	8.925	8.925	8.925	— 0.2	— 0.2	— 0.1	— 0.1	— 0.1
Rumania b) . . . . .	New York	0.605	0.605	0.605	0.605	0.605	+ 1.2	+ 1.2	+ 1.2	+ 1.2	+ 1.2
Sweden a) . . . . .	Stockholm	5.470	5.480	n. q.	5.530	5.520	— 31.8	— 31.9	n. q.	— 32.5	— 32.4
Czechoslovakia a) . . . . .	Prague	33.78	33.80	33.75	33.80	33.80	— 0.1	— 0.1	— 0.0	— 0.1	— 0.1

a) Value of the United States dollar expressed in national currency. — b) Value of the national currency expressed in United States cents. — 1) The percentage represents the premium or the loss as far as possible on the national exchange. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piastre and the French franc changed only slightly the exchange rate of the latter only is given. — 4) These rates have been obtained by converting the original quotations in pence per rupee into cents per rupee.

Prof. ALESSANDRO BRIZI, Segretario generale dell'Istituto, Direttore responsabile.

# MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

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*The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.*

## CEREALS

The data of production in 1932 have undergone modifications for a small number of countries, the most important being Spain, Poland and Argentina. In Spain, according to the final estimate, the wheat crop was about 5.7 million bushels above the already high figure previously published. In Poland, on the other hand, the figure of production has been further reduced by about 6.5 million bushels. In Argentina, according to the second estimate, the wheat crop is about 3.9 million bushels above the preceding estimate.

In addition the first estimates are now available for wheat production in the Union of South Africa and in New Zealand. In the former country the crop has been above average but 4.4 million bushels below the very good crop of 1931-1932, in New Zealand, on the other hand, production has been very large and exceeds that of last year by about 3.4 million bushels.

In all, the data received since the publication of the Crop Report for January involve practically no change in the situation since the increases recorded for some countries are almost balanced by decreases for others.

The first estimates of the areas sown to winter wheat are now available for a group of countries which last year cultivated about four-fifths of the total area under this crop. These data, though incomplete, indicate that about 6 million acres less have been sown this season than last, a reduction of about 4%.

In Europe several of the importing countries have somewhat increased the areas sown to winter wheat, and the total for the eleven countries of this continent from which data have been received shows an increase of about 500,000 acres.

In North Africa the wheat area may be expected to be slightly inferior to that of last year.

A heavy reduction has been made in the winter wheat crop of the U. S. S. R., where about 4.2 million acres less than last year have been sown.

A decrease of about 1,200,000 acres has occurred in India, due principally to the unfavourable conditions which prevailed during the sowing period in the Punjab.

In the United States, despite propaganda for a reduction of area, the latter is only 500,000 acres smaller than last year. Adverse weather conditions during the winter in a considerable part of the country caused, however, grave damage to the sowings, with the result that it is forecast that the area for harvest will be considerably smaller than that of 1932.

*Area sown to winter cereals.*

(Thousand acres)

COUNTRIES	WHEAT			RYE			BARLEY			OATS		
	1932/33	% 1932/33		1932/33	% 1932/33		1932/33	% 1932/33		1932/33	% 1932/33	
		1931/1932	1926/1927 to 1930/1931		1931/1932	1926/1927 to 1930/1931		1931/1932	1926/1927 to 1930/1931		1931/1932	1926/1927 to 1930/1931
		= 100	= 100		= 100	= 100		= 100	= 100		= 100	= 100
Germany . . .	4,947	101.3	123.2	10,991	101.5	97.7	618	101.7	129.6	—	—	—
Bulgaria . . .	2,911	95.2	104.2	493	96.4	96.0	457	99.0	97.6	—	—	—
Spain . . .	11,057	97.8	101.6	—	—	—	4,599	95.1	101.8	—	—	—
Finland . . .	34	106.0	127.2	560	103.0	104.1	—	—	—	—	—	—
France . . .	12,864	99.8	100.7	1,859	103.8	93.3	412	95.2	98.5	2,156	97.8	102.4
Greece . . .	1,679	112.2	125.5	170	94.1	119.5 1)	558	97.3	116.0 1)	332	90.4	113.2
Italy . . .	12,365	102.4	103.6	—	—	—	—	—	—	—	—	—
Latvia . . .	182	105.0	151.5	652	110.0	—	—	—	—	—	—	—
Lithuania . . .	389	92.6	125.6	1,182	99.7	101.3	—	—	—	—	—	—
Romania . . .	6,084	103.3	—	—	—	—	—	—	—	—	—	—
Czechoslovakia .	2,151	107.7	115.3	2,476	98.1	99.9	15	98.5	99.8	—	—	—
U. S. S. R. . .	28,058	86.8	126.9	63,007	97.8	98.0	711	81.6	70.5	—	—	—
Canada . . .	556	97.9	62.2	496	74.7	67.7	—	—	—	—	—	—
United States .	39,902	98.7	90.2	4,649	93.0	114.9	—	—	—	—	—	—
British India .	31,829	96.2	105.3	—	—	—	—	—	—	—	—	—
Cyrenaica . . .	13	234.0	59.7	—	—	—	71	146.0	80.6	—	—	—
Egypt . . .	1,467	83.3	91.4	—	—	—	287	78.4	80.0	—	—	—
French Morocco	2,817	115.0	104.5	—	—	—	3,410	116.4	113.4	64	101.2	77.4
Tunis . . .	1,606	76.5	89.1	—	—	—	791	53.3	66.0	69	80.0	66.9

1) Winter and spring crops.

\* \* \*

As regards the crop condition of winter cereals the information received from European countries indicates that the month of January and the first ten days of February were in general favourable to the sowings.



The prevalently mild temperatures and, in various regions, rainy weather of the first half of January were followed, in the latter half of the month, by a period of intense cold, which was generally beneficial to the crops in checking the growth of the plants, which was, in many cases, excessive for the season.

At the moment when the temperature fell sharply, the fields had, in most of the country, a thick snow-cover, preventing any considerable damage by frost. In the whole of Europe the crop condition of winter cereals is consequently promising.

In the U. S. S. R. also, where crop condition at the middle of January was judged to be satisfactory, the depth of the snow cover increased during the latter half of the month but the varying depth of the snow gave rise to fears that winter cereals were not everywhere sufficiently protected against the intense cold.

Much less favourable news continues to be received from the United States, where the condition of crops in the central area of the country (Oklahoma, western Kansas and Nebraska) has been seriously compromised by the dry weather and damage has been caused in the Northern Pacific area by strong winds. Better conditions prevail in the East and Southeast of the country. The weather was excessively mild during the whole of January and in the first week of February with the result that the snow-cover disappeared almost completely from the fields. The cold weather that set in in the latter half of February, damaged crops in the southern section of the winter cereal producing area.

In British India the crops on unirrigated lands were damaged by the inadequacy of rainfall.

In North Africa the condition of the sowings is normal, although the relatively low temperatures of January checked the growth of vegetation in Algeria, Tunis and Egypt.

\* \* \*

*Austria* : In the first decade of January the weather was warm and sunny in the mountain areas while the lower areas were covered with mist. Toward the middle of January abundant snow fall was reported. Later there was a further fall in temperatures, with night frosts. Warmer weather came only at the beginning of January.

Due to the night frosts the leaves of winter cereals suffered somewhat but more serious damage was not experienced. Toward the middle of January winter crops were covered with a sufficiently thick cover.

At the beginning of February crop condition of winter cereals was as follows : wheat 2.3 (against 2.4 on 1 January this year and 2.7 on 1 February 1932) : rye 2.1 (2.1, 2.5) and barley 2.4 (2.4, 2.4).

*Belgium* : At the beginning of January the weather was mild but towards the latter half of the month very cold weather set in and temperatures as low as 10°C. to 12°C. were recorded. Before the frost the condition of the sowings was normal. During the frost progress was made in manure carting, threshing of cereals and repairing of fences.

According to the most recent information the final figure for spelt production in 1932 is 665,000 centals against 587,000 in 1931 and 683,000 in the quinquennium 1926-1930; percentages of 113.4 and 97.5 respectively. The data for meslin are respectively



COUNTRIES	†) AREA					†) PRODUCTION							
	1932 1932/33	1931 1931/32	Average 1926 to 1930 1926/27 to 1930/31	% 1932 1932/33		1932 1932/33	1931 1931/32	Average 1926 to 1930 1926/27 to 1930/31	1932 1932/33	1931 1931/32	Average 1926 to 1930 1926/27 to 1930/31	% 1932 1932/33	
				1931 1931/32	Aver. 1931/32 = 100							1931 1931/32	Aver. 1931/32 = 100
1,000 acres					1,000 centals			1,000 bushels					
Korea . . . . .	...	2,410	2,252	—	—	21,161	20,093	17,617	44,086	41,862	36,702	105.3	120.1
Japan . . . . .	2,107	2,097	2,265	100.5	93.0	37,316	36,730	38,870	77,744	76,522	80,980	101.6	96.6
Syria and Lebanon	766	818	746	93.7	102.7	4,398	6,812	8,299	9,163	14,193	17,291	64.6	51.0
Total Asia . . . .	5,283	5,325	5,263	99.2	100.4	62,875	63,635	64,786	130,993	132,577	134,973	98.8	97.0
Algeria . . . . .	3,279	3,178	3,505	103.2	93.6	14,330	12,993	16,886	29,855	27,069	35,181	110.3	84.9
Egypt . . . . .	366	306	364	119.6	100.4	5,792	4,653	5,379	12,067	9,694	11,206	124.5	107.4
Eritrea . . . . .	99	62	54	160.0	183.5	617	445	144	1,286	928	299	138.6	42.9
French Morocco . .	2,930	3,222	2,995	90.9	97.8	17,882	28,335	21,933	37,254	59,032	45,695	63.1	81.5
Tunis . . . . .	1,483	1,223	1,235	121.2	120.1	7,496	3,968	4,063	15,616	8,268	8,465	188.9	184.5
Total Africa . . . .	8,157	7,991	8,153	102.1	100.1	46,117	50,394	48,405	96,078	104,991	100,846	91.5	95.3
Argentina . . . . .	4) 1,520	1,439	1,276	105.6	119.1	15,432	10,620	7,668	32,151	22,125	15,976	145.3	201.3
*Chile . . . . .	111	106	167	104.8	66.7	...	1,487	2,390	...	3,097	4,980	...	...
*Uruguay . . . . .	10	10	9	106.2	117.0	...	71	66	...	148	138	...	...
New Zealand (1) a) b)	19	27	24	70.3	78.1	...	...	...	...	...	...	...	...
...	...	18	23	—	—	235	269	448	490	560	933	87.5	75.5
GRAND TOTALS . .	§) 60,121	58,753	58,236	102.3	103.2	681,333	580,554	651,368	1,419,464	1,209,508	1,357,041	117.4	104.6

## OATS.

Germany . . . . .	8,118	8,310	8,634	97.7	94.0	146,612	136,795	144,210	458,160	427,482	450,653	107.2	101.7
Austria . . . . .	784	777	759	100.9	103.4	10,020	7,321	9,645	31,312	22,877	30,141	136.9	105.9
Belgium . . . . .	712	723	682	97.8	104.4	16,763	15,483	15,044	52,385	48,384	47,013	108.3	111.4
Bulgaria . . . . .	281	293	335	96.0	83.9	2,488	2,259	2,327	7,777	7,060	7,272	110.2	106.9
Denmark . . . . .	983	937	999	105.0	98.4	23,149	20,624	21,386	72,339	64,448	66,832	112.2	106.2
Spain . . . . .	1,926	1,986	1,902	97.0	101.3	18,309	13,335	13,333	57,215	41,670	41,664	137.3	137.2
Estonia . . . . .	356	367	356	97.2	100.0	2,869	3,615	2,807	8,966	11,296	8,772	79.4	101.2
*Irish Free State . .	623	623	650	100.0	95.8	...	11,666	14,628	...	36,457	45,713	...	...
Finland . . . . .	1,119	1,149	1,100	97.4	101.8	14,573	14,684	12,952	45,539	45,886	40,475	99.2	112.5
France . . . . .	8,418	8,564	8,584	98.3	98.1	113,083	101,213	109,233	353,383	316,288	341,352	111.7	103.5
Engl. and Wales . .	1,577	1,652	1,802	95.5	87.5	28,022	27,774	32,032	87,570	86,793	100,098	100.9	87.5
Scotland . . . . .	867	835	893	103.9	97.1	16,710	13,933	15,573	52,220	43,540	48,664	119.9	107.3
N. Ireland . . . . .	286	286	312	100.0	91.7	6,465	5,065	6,312	20,203	15,827	19,725	127.6	124.4
Greece . . . . .	367	344	279	106.7	131.4	1,984	1,688	1,595	6,200	5,274	4,985	117.6	124.4
Hungary . . . . .	575	596	665	96.5	86.4	6,243	4,278	7,753	19,510	13,368	24,227	146.0	80.5
Italy 1) . . . . .	1,113	1,146	1,255	97.1	88.6	13,378	12,629	13,112	41,805	39,467	40,974	105.0	112.0
Latvia . . . . .	802	795	735	100.9	109.1	7,121	7,555	5,646	22,252	23,611	17,644	94.2	126.1
Lithuania . . . . .	931	900	828	103.4	112.4	7,981	8,981	7,311	24,940	28,065	22,846	88.9	109.2
Luxembourg . . . . .	74	75	72	98.9	102.9	1,124	871	984	3,514	2,721	3,076	129.1	114.2
Norway . . . . .	235	237	241	99.1	97.4	4,250	3,038	4,124	13,282	9,494	12,889	139.9	103.1
Netherlands . . . .	350	369	378	94.9	92.5	6,693	6,331	7,341	20,916	19,784	22,941	105.7	91.2
Poland . . . . .	5,486	5,367	5,125	102.2	107.0	52,709	50,915	52,374	164,714	159,109	163,668	103.5	100.6
Portugal . . . . .	422	443	443	...	...	2,354	2,026	1,835	7,355	6,331	5,735	116.2	128.2
Rumania . . . . .	1,956	2,154	2,757	90.8	71.0	14,169	14,776	24,354	44,276	46,175	76,107	95.9	58.2
Sweden . . . . .	1,577	1,590	1,729	99.1	91.2	24,802	22,326	25,867	77,506	69,767	80,835	111.1	95.9
Switzerland . . . . .	41	45	50	89.7	81.4	750	739	926	2,342	2,308	2,894	105.5	81.0
Czechoslovakia . . .	2,020	2,031	2,073	99.4	97.4	36,681	26,998	30,809	114,628	84,368	96,276	135.9	119.1
Yugoslavia . . . . .	810	936	937	86.5	86.4	5,935	5,837	7,283	18,548	18,242	22,759	101.7	81.5
Total Europe . . . .	§) 42,146	42,892	43,925	98.4	96.0	585,237	531,089	576,168	1,828,857	1,659,635	1,800,517	110.2	101.6
*U. S. S. R. . . . .	35,149	42,492	43,286	82.7	81.2	...	...	342,579	...	...	1,070,551	...	...
Canada . . . . .	13,148	12,871	12,971	102.2	101.4	133,131	111,615	134,725	416,034	388,795	421,014	119.3	96.8
United States . . . .	41,224	39,800	40,202	102.6	102.5	397,580	357,750	380,581	1,242,437	1,117,970	1,189,317	111.1	104.5
Total North Amer. .	54,372	52,671	53,173	102.3	102.3	530,711	469,365	515,306	1,658,471	1,466,765	1,610,331	113.1	103.0
Syria and Leb. . . .	28	27	42	102.3	66.6	299	228	287	934	711	897	131.3	104.1
Algeria . . . . .	504	557	605	90.5	83.4	2,271	2,628	4,169	7,096	8,212	13,028	86.4	54.5
French Morocco . . .	63	60	82	106.0	77.2	509	531	637	1,591	1,660	1,992	95.9	79.9
Tunis . . . . .	86	67	109	129.6	79.3	617	728	780	1,929	2,274	2,429	84.8	79.1
Total Africa . . . .	653	684	796	95.7	82.3	3,397	3,887	5,586	10,616	12,146	17,449	87.4	60.8
Argentina . . . . .	4) 3,652	4) 3,470	4) 3,535	103.3	103.3	27,558	22,170	20,033	86,118	69,280	62,603	124.3	141.3
*Chile . . . . .	174	166	203	104.9	86.0	...	1,575	2,171	...	4,923	6,785	...	...
*Uruguay . . . . .	135	148	141	91.0	95.6	...	994	801	...	3,107	2,504	...	...
New Zealand (1) a) b)	407	364	320	111.7	127.3	...	...	...	...	...	...	...	...
GRAND TOTALS . . .	§) 100,960	99,813	101,558	101.1	99.4	1,148,898	1,027,838	1,118,807	3,590,298	3,211,972	3,496,256	111.8	102.7

†) The two dates given refer to the years in which the harvest took place in the northern and southern hemispheres respectively. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production but not those of area are available. — \* Countries not included in the totals. — a) Autumn crops. — b) Spring crops. — c) Total crops. — d) Crops for grain only. — 1) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 2) Including spelt and maslin. — 3) European crops only. — 4) Area sown. — 5) Barley and meslin.

123,000 centals (213,000 bushels), 100,000 (173,000) and 177,000 (306,000); percentages 123.3 and 69.7.

*Bulgaria* : In the first half of January weather was cold ; there were even frosts, which caused serious anxiety as to the fate of winter cereals. Snow fell heavily almost throughout the country, however, in the second half of the month. Toward the end of January no frost damage had been reported. Snow on the fields hindered preparations for sowing of spring cereals, which had not begun by the end of the month.

*Spain* : Autumn sowings were carried out in good conditions and germination was regular. The winter has been very cold and snow has fallen heavily but weather in January did not prejudice cereals.

*Estonia* : Weather in December was satisfactory, being warmer than usual for the period, with temperatures above zero. Condition of winter cereals was, thanks to the fine weather, good.

Condition of winter sowings was good and crops developed regularly. Due to the abnormally mild winter weather winter rye developed almost too rapidly and there are fears that it will later undergo damage. Wheat has developed regularly. In the first decade of February temperatures were above normal and the snow-cover is very thin.

*Irish Free State* : Despite the exceptionally severe weather of January no serious damage was reported; few additional sowings of winter cereals could, however, be made. Early-sown crops germinated well and branched evenly and at the close of the month looked promising. Cultivation for spring sowings was carried out under generally good conditions and at the close of the month had progressed further than at the corresponding date last year.

*France* : The latter half of January was characterized by a notable fall in temperatures and the cessation of the steady rains that had fallen since the beginning of the month. Despite some losses caused by frosts in some areas where the snow-cover was inadequate, conditions were very favourable to crops, being beneficial to the soil and arresting growth, which was too vigorous. Milder and damper weather returned in the first week of February; the thaw was good throughout the area and was accompanied by beneficial rains. No damage was reported and condition of wheat generally remained very satisfactory. Preparations for spring sowings, interrupted by the frost, were renewed in all regions and were fairly advanced.

*Great Britain and Northern Ireland* : The first half of January was generally mild with some rain while the latter part of the month was cold and frosty with some snow in Scotland, northern England, and Northern Ireland. The frost should prove beneficial to the arable land intended for spring cultivation. Where snow-cover was lacking the young wheat probably suffered from the frost but damage appears to have been slight and it is generally considered that the effects will have been beneficial in checking too forward growth, which was encouraged by the previous mild conditions. In England and Wales later-sown wheat was reported to be a little weak in many cases, while barley, oats and rye were looking well. Until the frost set in cultivation generally made good progress and work at the end of the month was as forward as usual. In Scotland and in Northern Ireland the area sown to wheat up to that date showed a considerable increase as compared with recent years.

*Hungary* : In the first half of the five-week period from 14 January to 18 February temperatures were low but in the second half they were exceptionally high. Precipitation was generally small and fell in the form of snow in January and of rain or rain mixed with snow in February. The thickness of the snow-cover varied greatly in the Transdanubian area, being from 8 to 12 cm., while the plain often had no snow-cover.

In the coldest period (the third decade of January) sowings of winter cereals were everywhere covered with snow which melted in February. It may be said that winter sowings have passed through the cold season well. No frost damage has been reported and there are only isolated cases of insect damage.

*Italy* : In the first half of January there was some precipitation, with snow here and there. Wheat sowings profited greatly from the dry cold weather; growth of minor cereals was satisfactory.

During the latter half of the month the temperature fell considerably and variable rains occurred everywhere. Conditions for the wheat crop, except in some areas, are favourable or even excellent. In some areas of southern and insular Italy, the crop has begun to tiller; field work has been hindered nearly everywhere by adverse weather.

*Latvia* : In the first decade of January temperature remained 2°-3° C. above normal. Cold and frost set in toward 10 January almost throughout the country and lasted until about 25 January; temperature in some areas fell to -26.4° C. At the beginning of the month there was some snow but the snow-cover became thick only toward the end of the second decade and by the end of the month the thaw had caused the disappearance of a good part of the snow.

Condition of winter rye at the beginning of February was average according to 19.8 % of the replies of correspondents, above average according to 78.1 % and below average according to 2.1 %. The corresponding figures for winter wheat were 24.5 %, 73.1 % and 2.4 %.

*Lithuania* : In December and at the beginning of January the weather was fairly favourable to the crops. Toward mid-January plentiful rains fell and cold weather set in. A thick and well maintained snow-cover afforded good protection to the winter crops.

*Portugal* : In January the weather was variable with alternate days of copious rainfall and of sunshine, followed by very low temperatures and frequently by frosts. Cereal crops were already fairly advanced and suffered a little from these weather changes. In some areas with impermeable soil low elevation impeded absorption of the water and some wheat fields suffered losses.

*Rumania* : In the first half of January snow fell throughout the country. In mid-January the fields had a sufficiently thick snow-cover except in some north-western districts. In the departments of the Danubian plain, where winter crops suffered greatly from the autumn drought the snow brought the necessary moisture to the soil. Losses caused to sowings by the frosts in the first half of January were not appreciable; only in Bukovina and northern Bessarabia was partial damage reported. The second half of January was characterised by abundant precipitation throughout the country and by very low temperatures. At the beginning of February the soil was thickly covered by snow and sowings were well protected.

*Yugoslavia* : Weather was on the whole very variable in January; at first mild and rather rainy it gradually became colder in the latter part of the month. In the last decade cold days and night frosts became very frequent. However, the snow,

which began to fall heavily in the latter half of the month, covered almost the whole country and, thanks to the thick snow-cover, winter cereals were well protected from frosts by the end of the month.

*U. S. S. R.* : The estimates of areas sown to cereals in the winter of 1932 have so far undergone no change. Weather in January was generally cold throughout almost the entire Union. In the first decade of the month the thickness of the snow-cover was considerably less than last year; at the beginning of the second decade the weather became much colder, but, despite the cold and the insufficiency of snow, condition of winter cereals on 15 January was considered satisfactory; during the second decade and at the beginning of the last decade the thickness of the snow-cover considerably increased; in the northwestern regions of the Union the average thickness exceeded 5 cm., in those of the southeast 10 cm., while on the Ural and in western Siberia it varied from 10 to 30 cm. The unequal distribution of snow over the territory and the continuance of cold weather have, however, caused some anxiety as to the further development of winter cereals.

According to the final data of the Plan, approved by the Council of People's Commissaries of the U. S. S. R., the figure of total area sown in spring 1933 has undergone a slight decrease in relation to that announced in October 1932. In fact, the figure has been reduced from 241 million acres to 235 million, so that it is now almost the same as that sown in 1932 (234 million acres).

It is interesting to note that of the 156 million acres to be sown to spring cereals (including cereals of secondary importance) over 80 % should be sown by *kolkhozi* and *sovkhozi*. The number of «mobile stations for agricultural machinery and tractors» has lately increased from 2,410 to 2,768. These stations are responsible for the working of 58 % of the area to be sown in spring by the *kolkhozi*.

The area anticipated in October 1932 to be sown to the principal cereals, wheat, barley and oats, 119 million acres, has been reduced to 115 million acres, which exceeds by 10 % that sown to the same crops in spring 1932 (104 million acres). On examination of the data for each spring cereal separately it appears that the area to be sown to wheat (57 million acres) exceeds by 7 % that sown in spring 1932 (54 million acres); for spring barley the 1933 area (18 million acres) exceeds that of 1932 (16 million) by 13 %; for oats the area (40 million) is 15 % greater than in 1932 (35 million).

Adding to the area devoted to wheat in the winter of 1932 (28 million acres) that anticipated in spring 1933 (57 million acres), the total under wheat in 1932-33 would attain 85 million acres, an area almost the same as that of 1931-32 (85.9 million acres) and 7 % above that of 1930-31 (92 million acres).

*Argentina*: The second estimate of the wheat crop is about 2,200,000 centals (3,700,000 bushels) above that previously published. For other cereals the second estimate will be published only next month, but it is expected that the figures of the first estimate will remain practically unchanged for rye and barley and will be reduced for oats.

*Canada* : According to a report issued by the Dominion Bureau of Statistics, the 1932 wheat crop is grading very high; not taking into account the special grades of wheat, it is stated that, for the four-month period August to November 1932, 94.86 % of inspections graded No. 3. Northern or higher compared with 80.23 % in the corresponding period of 1931. For the same period, 61.8 % of the wheat grading No. 3 Northern or higher was classed as No. 1. Hard or No. 1. Northern compared with 41.1 % in 1931.

Durum wheat produced in the Prairie Provinces in 1932 is also grading very high. For the four months August to November 67 % of inspections graded No. 1,

while 23 % graded No. 2 and 10 % graded lower ; the corresponding percentages for 1931 were 41 %, 38 % and 20 % respectively.

The final estimate of the area under mixed grains in 1932 is 1,184,000 acres compared with 1,187,000 in 1931 and 1,077,000, the average for the period 1926-1930 ; percentages : 99.8 and 109.9. The corresponding figures of production are 17,566,000 centals against 17,744,000 and 17,159,000 respectively ; 99.0 % and 102.4 %.

*United States* : In the week ended on 25 January the same mild weather continued as in the previous four weeks ; a general snow-cover was still lacking. In previous weeks the weather had been exceptionally favourable for seasonal outside operations but recent rains had retarded ploughing over large areas, especially in the Ohio Valley and Southern States. In the following week to 1 February the weather was again mild and additional rains fell ; moisture was generally abundant in the central and eastern sections. Winter cereals were in fair to good condition in the Southeast and East with the weather generally favourable for growth. Wheat is good to excellent in the Ohio Valley with only local reports of heaving and some unfavourable colour. In Missouri, eastern Kansas, Arkansas and Texas, winter grains are in fair to very good condition, with some greening or growth noted in all sections ; in Oklahoma, western Kansas and Nebraska, the crop is very poor to only fair with practically no improvement and some damage by soil blowing.

Moisture was needed in the Northern Pacific area, where strong winds blew out the seed in some sections, making the necessity for considerable re-sowing probable. In the week ended on 16 February the weather was cold throughout the country and damage to winter cereals was reported in the [southern section of the winter wheat belt due to lack of snow-cover.

To significant change took place in crop condition in the week ended on 23 February.

*Mexico* : December was cold and dry. Frosts caused local damage but crop condition was generally satisfactory.

*India* : According to a telegram of 8 February from the Punjab Government, the crop condition of wheat was estimated to vary generally from average to good on irrigated lands and from below the average to average elsewhere in the Province. Rains were wanted. In the United Provinces the condition of standing crops on January 14 was reported to be below the average. Frost caused some damage during the month in many districts.

According to a telegram of 21 February received from the Punjab Government, the second estimate of the area sown to wheat in the province is estimated at 9,477,000 acres compared with 10,918,000, the corresponding estimate for 1931-32 and 10,745,000, the average of the second estimates for the period 1926-27 to 1930-31 ; percentages : 86.8 and 88.2.

*Japan* : At the beginning of February weather was favourable to wheat and barley.

*Palestine* : Although the rainfall for January was much below the average the amount was sufficient to germinate all dormant seeds and new sowings and to bring relief to those crops which had survived the drought of the early sowing season. The distribution of rainfall was excellent throughout the country and the conditions of crops and the outlook in general show marked improvement on those indicated in the last report. The issue of substantial seed loans and forage loans has enabled farmers

to resow their lands. According to the latest reports it is estimated that some 7,400 acres in Gaza Sub-District and 12,400 in Beersheba had to be resown. In Beersheba District the crops are germinating and look quite healthy. The success of the crops in both the above-mentioned Districts depends on the future rainfall, and can now be estimated at 80 % of normal. The condition of *afir* wheat and barley in the Northern Circle is excellent. Winter wheat and barley in the northern areas are normal. A fair germination of late sown crops is noted in the Southern areas.

The oat crop shows a slight improvement in growth.

*Syria and Lebanon* : In Syria and Latakia sowings of wheat, barley and oats were effected under good conditions, in the Lebanon under bad conditions and in the Jebel Druze under the quite unfavourable conditions of persistent drought. In the first two countries germination was fairly regular following on the late rains, in the Lebanon it took place under bad conditions and in the Jebel Druze it was very late. Preparations for spring sowings were begun in Latakia and are being carried out under good conditions. In general more or less unbroken drought has prevailed for months throughout the Levantine States. In the south clouds of desert partridges have settled on the sown lands and are devouring the grain. The prolonged drought accompanied by severe cold and dry winds have compromised early sowings on light lands.

*Algeria* January was characterized by an appreciable fall in temperatures and by persistent rains, while in some localities there was even snow and hail ; on the high plateaus there was hoar-frost.

Sowings, which were still in progress at the end of January, were up to that date carried out under good conditions. Though it was still impossible to estimate precisely the area sown there seem to be no grounds for expecting a reduction on that of last year.

Germination was on the whole regular but growth did not make great progress in January due to the relatively low temperatures.

*Libya* : Rains have been very abundant and the season has begun auspiciously throughout almost the whole colony ; should precipitation not be inadequate later, good yields may be anticipated.

*Egypt* : Weather conditions during January were favourable except on some cold days. Light rain benefited growth, which was appreciably slow in Lower Egypt, especially in poor soil in the North of the Delta. Ears have started to form in early-sown areas in Upper-Egypt. Crop condition of wheat and barley on 1 February was 100 as on 1 January 1933, and on 1 February 1932.

*French Morocco* : The dryness of the autumn and the heavy precipitation of December generally retarded sowings, these were actively pushed forward as soon as fine weather returned at the end of December and in January. In some coastal areas sowings seem at least as large as last year, in the interior, on the other hand, wheat sowings appear somewhat reduced in favour of barley, those of oats appear relatively large on European holdings in some coastal areas.

The humidity of the soil and the mild temperatures have favoured sprouting of cereals, crop condition is generally very satisfactory.

*Tunisia* : Copious rains fell in January over the whole territory but were too late to compensate entirely for the reduction in sowings in the centre and south due to the



drought that continued until the end of December ; the consequences of these rather unfavourable conditions will probably be especially felt on sowings of barley and, to a less extent, on those of hard wheat but will be negligible on those of soft wheat, which is almost exclusively grown in the north.

Sprouting was hindered in December by the absence of moisture but was fairly regular. The fall in temperatures in January slackened growth.

*Union of South Africa* : Wheat was harvested under very favourable weather conditions in the south-western districts of the Cape Province in December ; threshing results were generally satisfactory.

*Australia* : According to a telegram received on 21 February the harvest had been completed. The previous estimate of production remained unchanged. The grain is heavy.

## MAIZE

*Argentina* (Telegram of 8 February) Crop condition was bad in part of the country owing to locust and drought damage.

(Telegram of 22 February). The condition of the maize crop has improved in the last two weeks. The damage caused by drought and locusts has, however, as previously reported, destroyed sowings over an area of 3,700,000 acres.

*United States* : The latest statistics of the production of maize for different uses in 1932 are as follows.

	1932	1931	Average 1926-30	1931 % — 100	1932 Average — 100
<i>Area (000 acres)</i>					
Maize for grain . . . . .	93,396	89,614	84,081	104.2	111.1
Maize for silage . . . . .	4,052	4,650	4,342	87.1	93.3
Maize for hogging down, grazing and fodder . . . . .	10,281	11,037	11,052	93.2	93.0
<i>Production</i>					
Maize for grain { (000 centals) . .	1,404,995	1,240,547	1,206,556	113.3	116.4
{ (000 bushels) . .	2,508,920	2,215,262	2,154,565		
Maize for silage { (000 centals) . .	612,560	660,620	607,072	92.7	100.9
{ (000 sh. tons) . .	30,628	33,031	30,354		

The total maize crop of 1932 was very large and previously exceeded only by those of the years 1915, 1917 and 1925. The increase took place principally in the production for grain, which was 13.3 % larger than in 1931 and 16.4 % above the average of 1926-1930.

*French Indo-China*. In the Centre and South of Annam the crop has been average.

*Java and Madura* : According to the most recent estimate production of maize in 1931-32 was 43,491,000 centals (77,662,000 bushels) against 42,126,000 (75,225,000) in 1930-31 and 42,246,000 (75,440,000) in the average of the five years ending 1929-30. Percentages 103.2 % and 102.9 %.

*Palestine* : Ploughing is in progress.

*Algeria* : Preparatory work was begun and carried out under good conditions though the rains of January caused considerable interruption

*French Morocco* : In the coastal areas preparations for autumn sowings were carried out under very good conditions, the soil is well provided with moisture.

*Southern Rhodesia* Weather conditions favoured planting

# Maize

COUNTRIES	AREA					PRODUCTION							
	1932 — 1932/33	1931 — 1931/32	Average 1926 to 1930	% 1932		1932 — 1932/33	1931 — 1931/32	Average 1926 to 1930	1932 — 1932/33	1931 — 1931/32	Average 1926 to 1930	% 1932	
			1926/27 to 1930/31	1932/33				1926/27 to 1930/31			1926/27 to 1930/31	1932/33	
				1931/32	Average age = 100							1931/32	Average age = 100
1,000 acres					1,000 centals			1,000 bushels of 56 lbs					
Austria .	148	152	145	97.2	102.4	2,690	2,794	2,508	4,803	4,990	4,479	96.3	107.2
Bulgaria .	1,829	1,682	1,693	108.8	108.0	23,246	19,594	15,239	41,511	34,989	27,212	118.6	152.5
Spain .	1,102	1,053	1,044	104.7	105.6	15,280	14,778	13,215	27,286	26,389	23,598	103.4	115.6
France .	813	855	843	95.0	96.5	10,037	13,789	9,695	17,924	24,623	17,312	72.8	103.5
Greece . . .	587	618	513	95.0	114.5	2,200	3,499	3,597	3,900	6,248	6,423	63.0	61.3
Hungary	2,877	2,720	2,652	105.8	108.5	53,701	33,459	35,897	95,894	59,749	64,102	160.5	149.6
Italy 2) 3)	3,259	3,206	3,515	101.7	92.7	61,906	40,354	52,449	110,546	72,061	93,659	153.4	118.0
*Poland . .	322	244	225	132.2	143.1	4,569	2,553	2,167	8,159	4,559	3,870	179.0	210.8
Portugal . .	240	243	222	98.7	108.2	...	2,296	1,968	...	4,099	3,515	...	...
Rumania	939	861	...	...	...	8,947	9,824	8,217	15,976	17,543	14,673	91.1	108.9
Switzerland .	11,775	11,749	10,851	100.2	108.5	119,711	133,674	101,569	213,771	238,704	181,374	89.6	117.9
Czechoslovak	2	3	3	97.1	75.9	60	64	77	106	114	138	93.1	77.1
Yugoslavia	331	344	347	96.2	95.6	6,819	5,020	5,272	12,176	8,965	9,415	135.8	129.3
Yugoslavia	6,442	6,168	5,734	104.4	112.4	99,646	70,623	65,918	177,940	126,113	117,711	141.1	151.2
*U S S R	9,084	9,741	8,483	93.3	107.1	..	..	69,622	...	...	124,325	...	...
Canada	130	132	159	98.7	81.9	2,832	3,051	3,172	5,057	5,449	5,665	92.8	89.3
United States	107,729	105,301	99,456	102.3	108.3	1,628,505	1,437,691	1,441,278	2,908,045	2,567,306	2,573,710	113.3	113.0
Mexico	7,945	8,346	7,692	95.2	103.3	42,816	47,150	40,993	76,458	81,196	73,196	90.8	104.5
Syria and Leb	44	65	120	68.0	37.0	403	730	1,352	719	1,303	2,415	55.2	29.8
Algeria .	16	24	24	69.7	68.6	101	133	144	181	238	257	76.2	70.4
Egypt .	2,043	2,194	2,066	93.1	98.9	42,593	43,793	42,604	76,060	78,202	75,079	97.3	100.0
Eritrea	7	22	16	33.3	47.6	66	240	97	118	429	174	27.5	67.9
Kenya 3)	166	161	199	103.7	87.7	2,794	1,525	2,804	4,989	2,724	5,008	183.2	99.6
It Somali	24	53	39	45.1	61.0	213	521	417	380	931	745	40.8	51.0
Tunis 4)	44	45	41	99.0	108.2	121	110	109	217	197	194	110.0	111.3
*Argentina 1a)	14,332	14,468	12,180	99.1	117.7	159,505	176,194	...	284,831	314,634	...	...	...
1b)	10,626	9,431	9,713	112.7	109.4	...	...	...	...	...	...	...	...
TOTALS . .	148,574	146,076	138,238	101.7	107.5	2,129,256	1,884,969	1,848,787	3,802,216	3,366,022	3,301,409	113.0	115.2

\* Countries not included in the totals. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production but not those of area are available — a) Area sown — b) Area harvested. — c) Area to be harvested — §) Spring crop (maggengo). — §) Summer crop (cinquantino) — §) Calculated figure — 2) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 3) European crop. — 4) Maize and sorghum

*Union of South Africa* In the Transvaal soaking rains fell and the young crop was progressing well at the beginning of January. Farmers were fully occupied with ploughing and planting. Complaints are general that the stalkborer (*Busseola fusca*) is very active. In the Orange Free State rainfall was very patchy and strong scorching winds caused much damage to the young crop, large stands being destroyed, making replanting necessary, conditions are critical in the southeastern district, where ploughing had to be abandoned. In Natal good rains fell and maize prospects were most promising, despite some reports of stalkborer in early-planted crops.

## RICE

*United States* : According to the official annual outlook report, the demand for rice during the 1933-34 season is expected to be little, if any, greater than in 1932-33.

*India* : Harvesting of winter paddy had been finished in Bengal at the middle of January and threshing was in full swing. Tilling for autumn crops made good progress during the month. Rains fell over most of the province in the latter half of the month. On 30 January the harvesting of winter paddy was being completed in Bihar and Orissa.

## Rice.

COUNTRIES	AREA					PRODUCTION							
	1932/33	1931/32	Average 1926/27 to 1930/31	% 1932/33		1932/33	1931/32	Average 1926/27 to 1930/31	1932/33	1931/32	Average 1926/27 to 1930/31	% 1932/33	
				1931/ 1932	Aver- age							1931/ 1932	Aver- age
1,000 acres			= 100	= 100	1,000 centals			1,000 bushels of 45 lb.			= 100	= 100	
Bulgaria . .	13	17	18	77.8	72.8	304	307	350	675	683	777	98.8	86.8
Spain . . .	123	113	121	108.6	101.7	7,016	5,869	6,782	15,591	13,042	15,071	119.5	103.4
Italy 1) . .	335	359	350	93.2	95.6	14,476	14,598	14,689	32,169	32,440	32,642	99.2	98.6
United Stat	869	978	963	88.9	90.3	17,710	20,705	19,458	39,356	46,012	43,240	85.5	91.0
Korea . . .	3,824	4,104	3,922	93.2	97.5	64,297	63,283	62,987	142,879	140,625	139,967	101.6	102.1
Formosa { a)	700	678	628	103.3	111.5	16,731	14,466	12,455	37,180	32,146	27,678	115.7	134.3
India { b)	82,026	84,260	80,839	97.3	101.5	1,057,478	1,137,958	1,058,099	2,349,905	2,528,744	2,351,285	92.9	99.9
Indo China.	981	877	1,085	111.8	90.3	7,716	5,472	9,186	17,147	12,160	20,413	141.0	84.0
Annam { c)	1,409	1,411	1,464	99.8	96.2	14,771	10,737	12,408	32,824	23,859	27,573	137.6	119.0
Cochin-China	5,066	4,932	5,161	102.7	98.1	48,502	49,839	46,998	107,780	110,750	104,439	97.3	103.2
Laos . . .	1,137	1,161	1,118	97.9	101.7	7,606	7,275	7,716	16,902	16,167	17,147	104.5	98.6
Tonkin { v month)	1,181	1,184	1,293	99.8	91.4	13,089	13,147	15,882	29,086	29,215	35,292	99.6	82.4
Japan . . .	7,983	7,962	7,829	100.3	102.0	240,764	220,133	242,738	535,020	489,174	539,406	109.4	99.2
Java and { e)	8,053	7,596	7,496	106.0	107.4	109,807	107,188	106,961	244,011	238,192	237,687	102.4	102.7
Madura { f)	1,052	1,086	1,127	96.9	93.3	9,099	8,796	9,601	20,220	19,547	21,336	103.4	94.8
Egypt . . .	489	67	325	725.5	150.6	12,125	1,585	8,970	26,945	3,522	19,933	765.1	135.2
TOTALS . .	§) 116,129	117,673	114,554	98.7	101.4	1,660,720	1,696,713	1,649,744	3,690,421	3,770,399	3,666,029	97.9	100.7

\* Countries not included in the totals. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production but not those of area are available. — a) First crop. — b) Second crop. — c) First semester. — d) Second semester — e) Irrigated rice. — f) Unirrigated rice. — 1) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey.

According to the fourth forecast of the rice crop the area likely to mature (i. e., area sown less area destroyed) in Lower Burma, from which practically all the export is derived, was 9,613,400 acres, a small increase on the area given in the third forecast, an increase of 2.2 % on the corresponding estimate of last year and one of 2.1 % on the final figures of last year.

Condition of the crop in Lower Burma, as in Burma as a whole, was much better than last year, the figure for Lower Burma being 94 against 82 at the date of the fourth forecast for 1931-32. The condition figures had dropped a few points in all the Upper Delta districts since the third forecast; in the districts of the Delta proper they were stationary, except in Bassein and Insein, where a rise had occurred.

Reaping had been completed or was nearing completion in most districts. Outturn was below normal in some districts, including Pegu, Insein, Bassein, Henzada and Myaungmya, due generally to inadequacy of the middle rains.

The estimated outturn of milled rice for Lower Burma was 9,298 million pounds. In Burma as a whole production was estimated at 11,131 million pounds against 9,357 million pounds last season, an increase of 19.0%; the corresponding figures in terms of milled rice and rice products are for Lower Burma 10,331 million pounds, for Burma as a whole 12,368 million pounds in 1932-33 against 10,397 million last season. The exportable surplus for 1933 was estimated at 7,840 million pounds of rice and rice products.

*French Indo-China*: The weather in Tonkin in October and in the second half of November was unfavourable to the second crop; the excessive rainfall and low temperatures hindered flowering and induced a relatively large proportion of underdeveloped grain; insect damage was also rather large. Despite these adverse circumstances yields of early varieties harvested in October and those of semi-early and main crop varieties harvested in November were satisfactory; late varieties showed satisfactory growth at the end of November. In Cambodia, though October and November were rather rainy, yields of early varieties are generally good.

On the whole the information now available, though still rather vague would lead to a slight reduction in the forecast of last month for the production of the Union as a whole in 1932-33; the approximate figure of 13,000 million pounds of rough rice would appear rather as a maximum, to which the actual figure will probably be rather inferior. Sowings and transplantings for the first crop of the 1933-34 season have been begun under generally satisfactory conditions in Cochin-China, Tonkin and Annam.

*British Malaya*: Rainfall in December was much less than in November and below the normal throughout the Peninsula. Abnormally low precipitation was especially notable on the east coast, in the rice areas of Kelantan and Pahang.

Crop prospects were generally good throughout the Peninsula. Though in Kedah some newly planted padi was destroyed by the floods at the end of November, there was on the whole little damage reported. In Krian flowering was so far generally good; in the northeast the crop was making excellent growth but as planting was late there were fears that a wet harvest might reduce the yield. Elsewhere in Perak prospects were good. In Selangor harvesting was generally completed in the inland districts and transplanting was practically completed in the coastal districts. Harvesting was in progress in Negri Sembilan and Malacca. Crop prospects in Kelantan were generally good but inland areas had suffered from shortage of water during the month. In Pahang harvesting was well advanced and yields were reported to be good, as there had been an increase of 9000 acres in the area under padi in the four districts of the West, it was certain that the crop would be a record one. Weather had been suitable in all parts of Johore and the efforts of the Department of Agriculture together with the increased interest in the crop shown by the cultivators themselves had resulted in prospects for padi in this State being very much better than in the past.

*Siam* : It was expected that the figure for total area planted in all Siam in 1932 would finally reach 7,512,000 acres ; the area reported up to the end of November in sixty provinces was 7,389,000 acres against 7,131,000 in 1931, an increase of 258,000 acres or 3.6 %. The area damaged up to the end of November was 297,000 acres against 721,000 acres up to the same date in 1931, a very considerable decline, but ultimate damage was expected to amount to 593,000 acres. The area harvested up to the same date was 932,000 acres against the corresponding figure of 879,000 acres in 1931 and production of rough rice was respectively 1,141 and 989 million pounds, an increase in unit-yield from 1,126 lb. to 1,224 lb. per acre. The general condition of the crop was reported to be better than in the preceding year and, calculated on the conservative estimate of 1,433 lb. per acre, production in 1932-33 would amount to 9,197 million pounds of rough rice.

In the five inner circles, from which exports are derived, the area estimated at the end of November to have been planted was 4,604,000 acres against 4,529,000 acres at the same date in 1931, an increase of 1.6 %, the area to be harvested 4,417,000 acres against 4,075,000 acres, an increase of 8.4 %.

## POTATOES

Since the publication of the January Crop Report, several countries, among which figure some important producers, have increased their figures of production fairly considerably.

Estonia has increased the previous estimate by about 2 million centals (4 million bushels), England and Wales by 2.9 million centals (4.8 million bushels), Czechoslovakia by 18 million centals (29 million bushels) and Belgium by about 20 million centals (33 million bushels). The largest modification has been made by Poland, which is second in the order of importance in production, with an increase of about 66 million centals (110 million bushels) on the preceding estimate ; the Polish production now known is consequently only 3.4 % smaller than the heavy crop of 1931 and exceeds the average of the preceding quinquennium by 8.2 %.

These changes bring a total increase of nearly 110 millions centals (184 million bushels), confirming the forecast made last month that the year 1932 had yielded a heavy crop, as the latter, in fact, exceeded the large 1931 crop by 4.3 % and the quinquennial average by 13.5 %.

*Belgium* : Owing to the economic situation purchases of selected seed potatoes are greatly reduced ; less potash and phosphates are being used ; the application of lime is, however, increasing

*Palestine* : Sowing of winter potatoes has been concluded. Growth is only fair.

*Algeria* : Preparations for the main-crop harvest (spring-summer) were begun and carried out under good conditions, though considerably interrupted by the rains of January.

Potatoes.

COUNTRIES	AREA					PRODUCTION									
	1932	1931	Average 1926 to 1930	% 1932		1932	1931	Average 1926 to 1930	1932	1931	Average 1926 to 1930	% 1932			
				1931	Average							1931	Average		
														1931	Average
1,000 acres			= 100	= 100	1,000 centals			1,000 bushels of 60 lbs			= 100	= 100			
Germany . .	7,114	6,979	6,943	101.9	102.5	1,036,538	967,091	864,334	1,727,529	1,611,787	1,440,527	107.2	119.9		
Austria . .	511	479	459	106.7	111.3	50,235	59,895	52,508	83,723	99,823	87,512	83.9	95.7		
Belgium . .	435	425	410	102.4	106.3	97,864	78,857	74,142	163,103	131,425	123,567	124.1	132.0		
Bulgaria . .	37	31	28	118.3	134.3	2,134	1,338	946	3,556	2,231	1,576	159.4	225.7		
Denmark . .	172	157	169	110.1	101.8	29,542	19,342	20,276	49,236	32,236	33,793	152.7	145.7		
Spain . .	1,042	1,024	832	101.7	125.2	113,118	103,110	85,576	188,526	171,846	142,623	109.7	132.2		
Estonia . .	166	168	166	98.8	99.9	17,258	18,839	16,688	28,762	31,398	27,813	91.6	103.4		
* Irish F. State	348	346	363	100.6	96.0	...	43,279	53,605	...	72,132	89,341	...	...		
Finland . .	192	174	173	110.5	111.1	22,168	15,997	17,419	36,945	26,661	29,030	138.6	127.3		
France . .	3,480	3,533	3,589	98.5	97.0	349,832	359,350	308,759	583,041	598,904	514,588	97.4	113.3		
Engl. a. W.	504	447	489	112.7	103.0	74,099	54,970	70,162	123,499	91,616	116,934	134.8	105.6		
Scotland . .	149	128	140	116.0	105.9	25,581	15,658	21,258	42,635	26,096	35,429	163.4	120.3		
N. Ireland .	142	134	150	105.6	94.5	25,090	15,635	23,567	41,817	26,058	39,277	160.5	106.5		
Greece . .	40	34	27	115.2	148.3	2,205	1,383	908	3,674	2,306	1,513	159.3	242.8		
Hungary . .	729	701	658	104.1	110.9	37,153	31,912	41,269	61,921	53,185	68,781	116.4	90.0		
Italy 1) . .	1,022	1,019	870	100.3	117.5	62,251	43,311	42,804	103,750	72,184	71,339	147.7	145.4		
Latvia . .	253	247	207	102.4	122.0	26,569	25,729	18,645	44,280	42,880	31,075	103.3	142.5		
Lithuania .	427	409	347	104.4	123.0	40,281	43,254	33,644	67,134	72,089	56,072	93.1	119.7		
Luxemburg .	40	41	40	96.0	99.0	5,115	4,700	3,652	8,524	7,832	6,086	108.8	140.1		
Malta . .	7	7	7	108.1	100.3	564	670	636	941	1,117	1,060	84.2	88.7		
Norway . .	123	116	120	105.9	103.0	22,818	17,071	18,150	38,029	28,451	30,249	133.7	125.7		
Netherlands	434	406	428	107.1	101.5	81,130	60,322	72,753	135,215	100,535	121,253	134.5	111.5		
Poland . .	6,709	6,716	6,250	99.8	107.3	660,827	683,179	610,520	1,101,357	1,138,609	1,017,513	96.7	108.2		
* Rumania 2)	471	474	484	99.4	97.3	...	40,789	43,463	...	67,981	72,437	...	...		
Sweden . .	337	327	354	103.1	95.2	43,872	33,020	36,508	73,119	55,033	60,846	132.9	120.2		
Switzerland.	115	113	119	102.0	97.0	14,813	16,898	14,971	24,688	28,164	24,952	87.7	98.9		
Czechoslov..	1,807	1,775	1,793	101.8	100.8	204,509	214,429	194,761	340,841	357,375	324,594	95.4	105.0		
* U.S.S.R. .	13,732	15,104	13,671	—	—	...	...	990,152	...	...	1,650,221	...	...		
Canada . .	522	584	562	89.4	92.9	39,416	52,305	46,352	65,693	87,175	77,252	75.4	85.0		
United States	3,368	3,375	3,097	99.8	108.8	213,953	225,186	214,002	356,589	375,310	356,671	95.0	100.0		
Java and M.	57	44	50	129.9	114.5	2,425	1,761	2,053	4,042	2,936	3,421	137.7	118.2		
Syria a. Leb.	18	20	16	87.8	115.6	735	971	1,089	1,224	1,619	1,815	75.6	67.5		
Algeria { e)	24	29	30	84.8	80.1	958	723	874	1,597	1,205	1,457	132.5	109.6		
{ m)	28	24	25	117.1	112.2	1,025	949	918	1,709	1,582	1,530	108.0	111.6		
TOTALS . .	30,004	29,666	28,548	101.1	105.1	3,304,078	3,167,855	2,910,144	5,506,699	5,279,668	4,850,148	104.3	113.5		

\* Countries not included in the totals. — e) Winter, so-called early, potatoes. — m) Main season crop. — 1) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 2) Unmixed crops. — 3) Area sown as on 20 June 1932.

SUGAR

*Barbados* : Frequent and heavy showers in the period from October to December, while of great value for the old crop, which had suffered from drought, caused rotting of the new plantings and unsatisfactory germination. At the end of December the crop to be cut in 1933 was in excellent condition. Production of sugar was expected to be about 2,000,000 centals (101,000 short tons).

*British Guiana* : A record production was expected. Weather was favourable almost throughout the year. The increase of flood-fallowing has also been very bene-

*Production of Cane-sugar.*

COUNTRIES	1932-33 (1)	1931-32	Average 1926-27 to 1930-31	1932-33 (1)	1931-32	Average 1926-27 to 1930-31	Percentages for 1932-33	
							1931-32 = 100	Average = 100
	Thousand cents			Short tons			%	
AMERICA.								
Argentina . . . . .	7,665	7,623	8,758	383,253	381,120	437,919	101	87
Brazil. . . . .	21,385	21,826	19,586	1,070,000	1,090,000	979,281	98	109
Cuba . . . . .	44,093	58,270	96,318	2,000,000	2,913,441	4,815,835	76	46
Ecuador. . . . .	265	504	442	13,000	25,000	22,084	52	60
United-States (L.) . .	4,019	3,139	2,536	200,900	157,000	126,798	128	158
Guadeloupe . . . . .	551	507	519	28,000	25,000	25,949	109	106
Jamaica . . . . .	1,344	1,417	1,333	67,000	70,840	66,646	95	101
Mexico . . . . .	4,718	5,161	4,433	236,000	258,000	221,655	91	106
Paraguay . . . . .	154	185	118	7,700	9,260	5,920	83	130
Peru . . . . .	8,819	8,868	8,690	400,000	443,400	434,506	99	101
Puerto Rico . . . . .	16,326	19,849	14,439	816,295	992,423	721,935	82	113
Dominican Republic .	9,414	9,579	7,749	471,000	478,931	387,455	98	121
Total America . . .	118,753	136,928	164,921	5,693,148	6,844,415	8,245,983	87	72
ASIA.								
Formosa . . . . .	18,541	21,805	14,940	927,000	1,090,249	746,981	85	124
India . . . . .	92,991	86,913	67,769	4,650,000	4,345,600	3,388,414	107	137
Japan. . . . .	1,764	2,072	1,932	88,000	103,586	96,620	85	91
Java . . . . .	29,763	57,320	59,818	1,490,000	2,900,000	2,990,857	52	150
Philippine Is. . . . .	23,590	20,944	17,906	1,180,000	1,050,000	895,282	113	132
Total Asia. . . . .	166,649	189,054	162,365	8,335,000	9,489,435	8,118,154	88	103
AFRICA.								
Egypt. . . . .	2,800	3,250	2,210	140,000	162,474	110,476	86	127
Mauritius . . . . .	5,379	3,616	4,952	269,000	180,806	247,577	149	109
Reunion . . . . .	1,102	946	1,071	55,000	47,312	53,552	116	103
Union of South Africa	7,848	6,519	5,910	392,000	325,900	295,498	120	133
Total Africa . . . .	17,129	14,331	14,143	856,000	716,492	707,103	120	121
OCEANIA.								
Australia . . . . .	12,119	13,148	11,365	605,900	657,400	568,236	92	107
Hawaii . . . . .	19,680	19,960	18,113	984,000	998,000	905,655	99	109
Fiji Is. . . . .	3,069	1,786	1,967	153,400	89,300	98,325	172	156
Total Oceania . . .	34,868	34,894	31,445	1,743,300	1,744,700	1,572,216	100	111
GENERAL TOTALS . .	337,399	375,207	372,874	16,627,448	18,795,042	18,643,456	90	90

(1) Approximate data.

ficial. The long dry spell in the last months of 1932 is expected, however, to result in a smaller crop in April and May due to premature ripening of the standing cane.

*Trinidad* : Rainfall in December and the first part of January was almost continuous but light. Grinding began early in January.

*French Indo-China* : The crop in Tonkin and Annam seems to have been satisfactory.

*India* : At the end of January harvesting and grinding of sugar-cane continued in the United Provinces. Cutting and grinding also proceeded favourably in Bengal. Frost caused slight damage to cane in one district of the Punjab at the middle of the

*Production of Beet-sugar (raw).*

a) Not including the U. S. S. R. — b) Including the U. S. S. R. — 1) Approximate data. — 2) To the end of December. — 3) To 15 December. — 4) Average 1927-28 to 1930-31.

*Union of South Africa*: Crop condition in December was 6 % below normal. Weather was favourable over the whole sugar belt ; average rainfall in the Zululand



section was 5 ½ inches, on the North Coast 3 ½ to 4 ½ inches and on the South Coast 5 inches. It was expected that practically all the mills would have completed grinding by the end of January.

### Sugar-beet.

COUNTRIES	AREA						PRODUCTION							
	1932	1931	Average to 1930	% 1932		Average to 1930	1932	1931	Average to 1930	1932	1931	Average to 1930	% 1932	
				1931	Average								1931	Average
			= 100	= 100	= 100	= 100								
1,000 acres					1,000 centals					1,000 short tons				
Germany .	669	941	1,102	71.1	60.7	173,628	243,370	257,369	8,681	12,168	12,868	71.3	67.5	
Austria . .	106	105	69	100.0	152.1	21,226	21,554	15,844	1,061	1,078	792	98.5	134.0	
Belgium . .	132	128	155	102.9	85.4	38,274	32,310	39,372	1,914	1,615	1,969	118.5	97.2	
Bulgaria . .	30	30	46	100.0	63.9	5,291	4,189	6,001	265	209	300	126.3	88.2	
Denmark . .	93	75	91	125.3	103.0	27,337	17,262	23,537	1,367	863	1,177	158.4	116.1	
Spain . . .	201	277	166	72.7	121.7	39,548	62,969	38,361	1,977	3,148	1,918	62.8	103.1	
Finland . .	6	5	5	117.3	110.9	1,036	794	834	52	40	42	130.6	124.2	
France . . .	618	621	633	99.5	97.6	154,857	136,592	145,298	7,743	6,829	7,265	113.4	106.6	
Engl. & W.	255	233	220	109.3	115.7	44,800	37,094	40,045	2,240	1,855	2,002	120.8	111.9	
Scotland . .	1	1	4	69.7	18.0	114	114	482	6	6	24	100.0	23.7	
Hungary . .	113	134	172	84.0	65.5	19,366	21,301	32,654	968	1,065	1,633	90.9	59.3	
Italy 1) . .	207	283	253	73.3	82.0	54,991	54,524	57,967	2,750	2,726	2,898	100.9	94.9	
Netherlands	99	93	153	106.9	64.7	34,613	22,690	45,961	1,731	1,134	2,298	152.5	75.3	
Poland . . .	286	367	517	77.9	55.4	52,250	60,875	96,718	2,612	3,044	4,836	85.8	54.0	
*Rumania . .	45	50	158	91.6	28.8	...	6,828	23,529	...	341	1,176	...	...	
Sweden . . .	99	87	75	113.4	131.0	29,366	19,317	18,577	1,468	966	929	152.0	158.1	
Switzerland	3	3	4	109.4	96.8	1,036	838	1,056	52	42	53	123.7	98.1	
Czechoslov.	360	458	671	78.5	53.7	87,335	115,541	146,730	4,367	5,777	7,336	75.6	59.5	
*U.S.S.R. . .	3,123	3,401	1,868	91.8	167.2	...	...	208,073	...	...	10,404	...	...	
Canada . . .	45	50	48	90.0	94.4	9,000	9,080	8,736	450	454	437	99.1	103.0	
United St. .	768	713	701	107.7	109.6	179,820	158,060	154,364	8,991	7,903	7,718	113.8	116.5	
TOTALS . .	4,091	4,604	5,085	89.0	80.5	973,888	1,018,474	1,129,906	48,695	50,922	56,495	95.6	86.2	

\* Countries not included in the totals. — 1) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey.

### VINES

*Austria* : At the beginning of February crop condition was 2.3 against 2.6 on 1 January 1933 and 2.3 on 1 January 1932.

*Spain* : The latter half of January was marked by a heavy decline in temperature, falls of snow in the Centre and North and frosts. Work proceeded normally in the vineyards. Markets remained generally fairly active though activity slackened especially on consuming markets. Exports are practically limited to shipments to France, which, though not very large, are greater than last year. Internal consumption is reduced. Price movements vary with region; prices are generally firm with an upward tendency for wines of good quality and high degree.

*France* : The period of severe cold that was experienced throughout the area was beneficial in that it left the soil in good condition, killed insects, slowed down too vigorous growth and favoured the clarification of wines in cellar. In the South operations, which were retarded by the bad weather of December and of the beginning of

January, were actively renewed when temperatures rose ; pruning was fairly advanced but cultivation and cleaning of the roots was backward and the vines were infested with weeds ; in other areas progress was good.

Condition of the vines at the beginning of February was satisfactory in the majority of regions though in places the mild and damp weather caused some anxiety as to the maturing of the wood. The same conditions, especially in the South, were often rather unfavourable for good classification of the wines, of which the composition left much to be desired.

### Vines.

COUNTRIES	AREA						PRODUCTION														
	1932		1931		Average 1926 to 1930	% 1932		1932		1931		Average 1926 to 1930	% 1932								
	1,000 acres						= 100		= 100		1,000 Imperial gallons				1,000 Amer. gallons				= 100		= 100
*Germany	205	204	201	100.3	101.6	...	62,463	40,928	...	75,012	49,151	...	...	...							
Austria	70	73	80	95.4	87.6	21,294	30,473	14,244	25,572	36,595	17,105	69.9	149.5	149.5							
Bulgaria	222	224	199	99.2	111.7	57,722	47,520	35,007	69,318	57,068	42,041	121.5	164.9	164.9							
Spain	3,526	3,526	3,460	100.0	101.9	439,794	419,583	481,258	528,153	503,881	577,948	104.8	91.4	91.4							
France 3)	3,682	3,559	3,441	103.4	107.0	1,047,831	1,263,933	1,114,578	1,258,351	1,517,870	1,338,508	82.9	94.0	94.0							
Greece	352	315	283	111.5	124.5	64,485	42,793	56,283	77,441	51,391	67,591	150.7	114.6	114.6							
Hungary	527	529	541	99.5	97.4	75,627	85,785	55,935	90,821	103,020	67,173	88.2	135.2	135.2							
Italy 4) (u)	2,542	2,491	2,051	102.0	124.0	1,016,236	799,211	866,401	1,220,408	959,781	1,040,470	127.2	117.3	117.3							
Portugal	7,323	7,332	8,572	99.9	85.4	...	...	...	...	...	...	...	...	...							
Luxemburg	3	3	3	99.0	78.4	895	1,880	1,139	1,075	2,258	1,367	47.6	78.6	78.6							
Rumania	...	593	583	...	...	131,985	165,159	133,020	158,502	198,341	159,745	79.9	99.2	99.2							
Switzerland	...	33	35	...	...	131,985	192,445	143,969	158,502	231,109	172,894	68.6	91.7	91.7							
Czechoslov.	47	47	42	101.9	111.9	8,799	15,178	12,678	10,567	18,228	15,225	58.0	69.4	69.4							
Yugoslavia	...	492	442	...	...	10,644	10,027	6,167	12,783	12,041	7,406	106.2	172.6	172.6							
Syria a. Leb.	130	130	108	100.0	120.9	94,479	98,850	74,841	113,461	118,710	89,877	95.6	126.2	126.2							
Algeria 3)	870	771	564	112.8	154.3	402,883	348,808	248,229	483,826	418,887	298,101	115.5	162.3	162.3							
Tunis	99	87	72	113.5	137.3	35,350	15,545	19,255	42,452	18,668	23,123	227.4	183.6	183.6							
TOTALS	—	—	—	—	—	3,482,695	3,481,901	3,205,785	4,182,403	4,181,451	3,849,858	100.0	108.6	108.6							

\* Countries not included in the totals. — u) Unmixed crop. — m) Mixed crop. — 1) Area bearing. — 2) Must. — 3) Declared crop. — 4) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey.

Quietness was still more accentuated on the principal markets ; business was extremely small this situation is in large part attributed to the uncertainty created by the delay in the trade negotiations with Spain, the conclusion of which is awaited for the authorization of the sale of the 1931 wines segregated in the hands of growers and traders. The general opinion is that if total supplies in France and Algeria are a little above the requirements for commercial consumption the proportion of wines of low degree and poor composition is such that the volume of wines fit for sale hardly exceeds market requirements and that the statistical position this season is sound. The conclusion of the agreement with Spain and the publication of the decree for desegregation would therefore, by removing the present uncertainty, lead to a revival of business.

It must be taken into account that if the quantity put into consumption by the trade (i. e., the quantity paying the turnover tax) is, for the first four months of the season, a little smaller than that in the corresponding period of 1931-32, it remains rather large. On the other hand the total volume purchased by the trade up to the

end of January both from Franco-Algerian and from foreign growers, is a little larger than last year, being 468.6 million Imperial gallons (562.7 million American gallons); the only matter of statistical interest, which was in any case to be expected, is that this quantity has been taken to a greater extent than usual from Algeria and, to a less extent, from the regions of the Centre and West and from foreign sources, so that the present atrophy of the market affects especially the great producing regions of the South, where not only shipments from the vineyards are very small but part of the wines purchased go to enlarge the commercial stock, which is rather large. In the majority of the other regions there is, on the other hand, normal activity.

Prices remain fairly firm though in the first days of February those of low degree wines underwent a slight decline on some southern markets.

*Italy* : The second half of January was marked by a heavy fall in temperatures with falls of snow and a little hail in the North and in Tuscany ; the bad weather, continuously wet in these areas since the beginning of the winter, hindered work in the vineyards, which was rather backward. Plantings and replacements are generally reported to be relatively small and, due both to the crisis and to the propaganda of the syndical organizations, the latter are directing their attention increasingly to the production of table grapes.

The greater part of the markets showed still more marked calm ; in some areas the quantities remaining in growers hands are no longer very considerable but the trade finds difficulty in moving its reserves. Internal consumption is poor, movement from south to north is reduced and exports have slackened off very notably.

Prices accentuated the tendency previously reported : firmness for wines of high degree and good composition, appreciable decline for weak wines and for those of doubtful conservability.

*Malta* : Production of grapes in 1932 was very large, 170,000 centals as against 116,000 in 1931 and 136,000, the average for the previous quinquennium. Percentages : 146.1 and 125.0.

*Palestine* : Pruning of vines is general in the plains and has started on the hills. Some new vineyards, especially for table grapes, have been planted out during January. Most growers, however, are still waiting for more favourable conditions.

*French Morocco* : Pruning and cultivation were pursued under good conditions. Crop condition at the end of January was satisfactory.

*United States* : In the following summary table are given the latest figures of production of grapes in the United States together with details for the different varieties grown in California, which furnishes the bulk of the production of the country :

		1932	1931	Average 1926-1930	% 1931 = 100	% 1932 Average = 100
United States . .	(ooo centals) . .	43,248	32,437	48,943	133.3	88.4
	(ooo sh. tons) . .	2,162	1,622	2,447		
California :						
Wine varieties .	(ooo centals) . .	7,760	6,320	9,088	122.8	85.4
	(ooo sh. tons) . .	388	316	454		
Raisin varieties	(ooo centals) . .	23,540	15,500	26,288	151.9	89.5
	(ooo sh. tons) . .	1,177	775	1,314		
Table varieties	(ooo centals) . .	6,340	4,580	8,264	138.4	76.7
	(ooo sh. tons) . .	317	229	413		

The figures include some quantities not harvested on account of market conditions.

In 1932 California produced about 87 % of the total grape crop of the country. The Californian crop was much larger than that of the previous year though still well below the average for the period 1926-1930. All varieties showed increases in production on 1931, and the raisin variety, accounting for over one half of the total United States crop, increased by over 50 %.

*Algeria* : Abundant rainfall in January slackened activity in the vineyards but work was recommenced towards the end of the month.

*Union of South Africa* : According to the returns received from producers by the Koöperatiewe Wynbouers Vereniging van Suid-Afrika, Beperk, the following is the wine production in the Union for 1932, the corresponding figures for 1931 being given for comparison .

		1932	1931
Production of good wine for sale . . . .	(Imp gall)	5,260,086	3,821,938
	(Amer. gall.)	6,316,890	4,589,804
Production of good wine for own use . .	(Imp gall.)	629,031	526,669
	(Amer. gall.)	755,410	632,482
Production of wine for distillation . . . .	(Imp gall.)	13,568,680	10,071,481
	(Amer. gall.)	16,294,763	12,094,942
Grapes delivered for conversion to must, syrup, vinegar for distillation, etc. . .	(1000 centals)	512	604
	(short tons)	25,619	30,180
Brandy (Classes A, B, and C) . . . . .	(Imp gall)	102,489	66,421
	(Amer. gall)	123,080	79,866
Rebate brandy on farms . . . . .	(Imp. gall.)	11,684	10,160
	(Amer. gall.)	14,031	12,201
Wine for vinegar produced on farms . . .	(Imp gall.)	28,067	56,261
	(Amer. gall.)	33,706	67,664
Grape juice or syrup . . . . .	(Imp. gall.)	214,757	213,995
	(Amer. gall)	257,904	256,989

These figures represent the actual production on the farms so that it is impossible to reduce the statistics to a common unit or in all cases to determine its ultimate marketed condition. The difficulty is increased by reason of the fact that a large quantity of wine is delivered to the Vereniging and wine buyers in the form of fresh grapes or syrup.

Taking 20 centals (1 short ton) as equivalent to 127 Imperial gallons (153 American gallons) the totals for 1932 and 1931 are respectively 23,066,000 and 18,600,000 Imperial gallons (27,715,000 and 22,337,000 American gallons).

## OLIVES

*Syria and Lebanon* : The prolonged drought and the late frosts of 1932 considerably damaged the crop.

*Algeria* : Harvesting was delayed by rain in January; the condition of olives remains average (100 by the system of the country).

The figure of oil production, which has been further reduced by the recent estimate, does not correspond to the olive crop, which is stated to be a good average; this is in large part due to the growing export of fresh olives; to make a comparison, whereas the quantity of olives harvested this year is about one third larger than that obtained

in the winter of 1930-31, oil production is, on the contrary, according to the latest estimate made at the end of January, slightly smaller ; though one-fifth larger than the minimum of the period 1920-21 to 1929-30, recorded in 1926-27, it is smaller than any other crop of the period.

### *Olives and Olive Oil Production.*

COUNTRIES	AREA					ENGLISH MEASURES			AMERICAN MEASURES			% 1932/33	
	1932/33	1931/32	Aver. 1926/27 to 1930/31	% 1932/33		1932/33	1931/32	Aver. 1926/27 to 1930/31	1932/33	1931/32	Average 1926/27 to 1930/31	1931/ 1932 = 100	Aver. = 100
				1931/ 1932 = 100	Aver. = 100								
	Thousand acres					Thousand centials			Thous- / s) pounds and t) Amcr. gallons			%	
Spain 1) . .	4,723	4,723	4,396	100.0	107.4	(a) ... (t) 7,601	39,818 7,741	42,939 8,211	... 99,886	3,981,789 101,725	4,293,906 107,895	... 98.2	... 92.6
Greece . .	—	—	—	—	—	(a) 2) 876 (t) 2,579	2) 700 2,286	2) 611 1,811	2) 87,632 33,890	2) 69,970 30,042	2) 61,129 23,796	125.2 112.8	143.4 142.4
Italy 3) (a) b)	2,054 3,181	2,055 3,179	1,437 4,273	99.9 100.1	143.0 74.4	(a) ... (t) ...	29,041 4,827	31,051 4,216	2,904,060 ...	3,105,102 63,431	2,729,260 55,401	93.5 ...	106.4 ...
Portugal . .	—	—	—	—	—	(a) ... (t) ...	1,504 988	988	...	19,763	12,980	...	...
United States . . .	—	—	—	—	—	a) 440 (t) 90	320 227	394 244	44,000 1,176	32,000 2,986	39,360 3,203	137.5 39.4	111.8 36.7
Syria and Lebanon . .	191	190	179	100.4	106.7	(a) 662 (t) 90	1,510 227	1,208 244	66,205 1,176	151,030 2,986	120,807 3,203	43.8 39.4	54.8 36.7
Algeria . .	—	—	—	—	—	(a) 3,858 (t) 384	4,700 593	3,567 457	385,810 5,042	469,996 7,794	356,708 6,006	82.1 64.7	108.2 83.9
Tunis . . .	—	—	—	—	—	(t) 1,102	1,102	820	14,485	14,485	10,777	100.0	134.4

a) Pure crop. — b) Mixed crop. — s) Olives. — t) Oil. — 1) Area bearing. — 2) Olives for table. — 3) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey.

*French Morocco* : The harvest was completed at the end of January. It was almost nil in the Marrakesh region which generally supplies over one-quarter of the total production.

*Tunisia* : Weather in January favoured growth and ripening but the rains hindered harvesting, which was not quite completed at the beginning of February. Crop condition was good.

## COTTON

*Barbados* : At the beginning of January the crop was in good condition and bolling was heavy. Picking was expected to begin in a few weeks.

*United States* : In the week ended on 25 January conditions were mostly favourable for preparations for spring plantings in the Atlantic States and much of Texas, but in most of the central portion of the belt and eastern Oklahoma, the soil was still too wet for much work and heavy rains again caused saturation in many places. In the following week to 1 February, field work was somewhat more active in the eastern and southern portions but otherwise, preparations for spring planting were still delayed.

The quantity of cotton, not including linters, ginned from the 1932-33 crop to the close of business on 15 January 1933, was 12,418,000 running bales (counting round bales as half bales), against 15, 996,000 in 1932, 13,594,000 in 1931, 14,177,000 in 1930, 13,889,000 in 1929 and 12,501,000 in 1928.

*Mexico* : The weather in December was generally favourable to preparatory work. Sowings had already begun and it was expected that the area would be greater than that sown last year.

*St. Vincent (British West Indies)* : At the end of December the cotton crop looked normally well but too much rain had been experienced for its general wellbeing. Stainers had made their appearance. On the date mentioned exact figures as to area were not to hand but it was estimated that it would be something in the vicinity of 600 acres, i. e., only a third of the previous year's acreage. Cotton pods were just beginning to open.

### Cotton.

COUNTRIES	AREA						PRODUCTION OF LINT							
	1932/33	1931/32	Average 1926/27 to 1930/31	%		1932/33	1931/32	Average 1926/27 to 1930/31	1932/33	1931/32	Average 1926/27 to 1930/31	%		
				1931/ 1932	Average age							1931/ 1932	Average age	
1,000 acres			= 100	= 100	1,000 centals			1,000 bales of 478 lb.			= 100	= 100		
Bulgaria . .	20	13	12	151.0	163.2	40	23	16	8	5	3	169.2	245.5	
Spain . . .	20	14	22	138.6	88.7	19	16	21	4	3	4	117.7	90.8	
Greece . . .	71	46	42	155.7	168.8	76	65	73	16	14	15	115.9	103.4	
Italy. . . .	3	4 1)	9	78.3	37.4	5	7 2)	18	1	1 2)	4	67.9	24.6	
* U.S.S.R. . .	5,367	5,346	2,503	100.4	214.4	...	8,812	5,695	...	1,843	1,191	...	...	
U. S. A. . .	37,589	40,693	44,690	92.4	84.1	60,835	81,719	70,907	12,727	17,096	14,834	74.4	85.8	
Mexico . . .	156	319	465	48.8	33.5	416	989	1,186	87	207	248	42.0	35.0	
China . . . .	3) 5,630	4,803	4,806	117.2	117.1	3) 10,789	8,529	10,183	3) 2,257	1,784	2,130	126.5	105.9	
Korea . . . .	393	472	493	83.3	79.8	606	483	683	127	101	143	125.7	88.8	
India 4) . . .	22,350	23,482	25,274	95.2	88.4	17,700	16,352	21,788	3,703	3,421	4,558	108.2	81.2	
Syria & Leb. .	23	75	51	30.9	45.5	18	81	47	4	17	10	21.7	37.8	
Algeria . . . .	5)	5	14	6.8	2.2	1	6	28	6)	1	6	15.4	3.6	
Egypt . . . .	1,135	1,747	1,861	65.0	61.0	4,158	6,153	7,649	870	1,287	1,600	67.6	54.4	
Eritrea . . . .	5	7	6	71.4	80.0	7	8	6	2	2	1	89.2	124.1	
Uganda . . . .	1,070	866	641	123.6	166.9	1,100	780	634	230	163	133	140.9	173.5	
* A. E. Sudan	330	336	299	98.2	110.2	...	985	593	...	206	124	...	...	
TOTALS . . .	68,465	72,546	78,386	94.4	87.3	95,770	115,211	113,239	20,036	24,102	23,689	83.1	84.6	

\* Countries not included in the totals. — 1) Average 1926/27, 1927/28, 1929/30 and 1930/31. — 2) Average 1929/30 and 1930/31. — 3) Second estimate. — 4) Final report. — 5) Area under 500 acres. — 6) Production under 500 bales.

*China* : In the Yellow River valley, where cotton has suffered from drought in past years, there was sufficient rainfall in the early part of the year, while in the Southern provinces conditions were fairly good, despite some cold weather, until the publication of the preliminary estimate in September 1932. After that time, however, conditions became less favourable. The northern crops suffered from excessive rainfall and early frost and considerable areas in Hupei, Shantung, and Shansi were inundated. In the Southern provinces the dry spell during August and September had a damaging effect on the cotton crop and the outlook in all cotton-growing provinces with the exception of Kiangsu was not so good as at the time of making the preliminary estimate. The present second estimate shows an anticipated decrease of little more than 25 per cent as compared with the preliminary forecast and moreover the cotton grown is poorer in quality than in previous years.

*India* : In the last week of January cotton picking was being completed in the Central Provinces.

The final estimates of the area and production of cotton in the Punjab and Madras are as follows : Punjab : area : 1932-33 : 2,268,000 acres ; 1931-32 : 2,547,000 ; average : 1926-27 to 1930-31 : 2,539,000 ; percentages : 89.0 and 89.3 ; production : 2,492,000 centals (521,000 bales) ; 2,056,000 (430,000) ; 2,690,000 (563,000) ; 121.2 % and 92.7 %. The corresponding figures for Madras are respectively : area : 1,956,000, 2,176,000 and 2,264,000 acres ; 89.9 % and 86.4 % ; production : 1,680,000 centals (351,000 bales) ; 1,721,000 (360,000) and 1,820,000 (381,000) ; 97.6 % and 92.3 %.

According to an official report, dated 19 January, for the whole of India, weather conditions were not quite favourable but the condition of the crop was, on the whole, reported to be fair.

*French Indo-China* : Growth was good at the end of November in Cambodia.

*French Equatorial Africa* : Production of lint in 1933 (1933-34) is estimated at 66,000 centals (13,8000 bales), a decrease of 21 % on that of last year, which was 83,800 (17,500) but an increase of 520 % on the average of the five years ending 1931, which was 10,700 (2,200).

*Algeria* : The crop, which was already smaller as a result of the reduction in area, has been greatly reduced and injured by *earias* and particularly by pink boll worm so that its total volume is extremely small ; toriential rains and strong winds have, moreover, hindered picking.

*Egypt* : Ploughing started in areas left fallow or sown with temporary *bersim*. Certain *dairas* (large estates) and big farmers in Middle and Lower Egypt have terminated the preparation of some areas. Preparation of the land is considered early this year.

Cotton ginned up to the end of January was as follows, in bales of 478 lb. net weight :

	1933	1932	1931	1930	1929
Sakellaridis . . . . .	189,300	191,800	270,300	375,000	412,700
Other varieties above :					
1 3/8 inches . . . . .	87,400	810,800	836,200	870,400	916,000
1 1/4 inches . . . . .	59,800				
1 1/8 inches . . . . .	458,100				
<i>Total</i> . . . . .	794,600	1,002,600	1,106,500	1,245,700	1,328,700
Scarto (linters) . . . . .	18,500	26,200	26,600	28,700	37,200

*French Morocco* : The last crop was small in consequence of the small area planted and in spite of normal unit-yields but the fibre was good.

The putting under cultivation of large areas in the north of Morocco leads to expectations of a fairly considerable extension of the crop in the next few years and perhaps in 1933-34.

*Nigeria* : According to a personal estimate of the Director of Agriculture, Nigeria, a crop of about 80,000 centals (17,000 Amer. bales) of American cotton should be exported in the current season 1932-33, representing about 400 % of the last year's crop and 90 % of the average for the previous quinquennium. This estimate is very rough and is based on area sown, crop condition and world prices of cotton at the time when it was made ; at that time it was understood that, if prices fell between then and the buying season, the estimated crop would not be reached, while, in the case of a rise in prices, it would even be exceeded.

The revised estimate of the total crop in 1931-32 was 24,592 centals (5,144 bales) of which American cotton made up 19,244 (4,026), Native cotton 16 (3) and Improved Ishan cotton 5,332 (1,115). The progressive disappearance of the native varieties, which are being replaced by Improved Ishan, is noteworthy.

*Uganda*: In December conditions favourable to maturation were generally maintained and in mid-January there appeared to be no grounds for any substantial revision of the previous crop estimate.

*Union of South Africa*: Crop condition was poor, due chiefly to continuous drought.

The area under cotton in 1931-32 was considerably reduced on account of the low prices prevailing at planting time, aggravated by the prospect of heavy losses on exchange, giving little hope of the crop being a paying proposition unless of very good quality. Production was further affected through a large proportion of the lower-grade cotton not being picked.

Weather generally was not favourable. Except for two or three districts, planting rains were late and the precipitation was very small and badly distributed throughout the growing season, drought, which, together with intense heat, caused considerable damage, being reported in some districts.

A notable feature was the absence of insect pests, only isolated districts reporting damage and this being practically confined to irrigated lands except in the Orange River area.

Owing to the continued low prices prospects of a larger crop in 1932-33 are poor and it is generally anticipated that the area will be lower than last season. Farmers are still, however, very interested in cotton and, with an improvement in prices, it is considered that the area would be considerably increased throughout the country.

## FLAX

*Argentina*: The second estimate of linseed production is slightly below the first, being 29,277,000 centals (52,281,000 bushels) against 29,763,000 (53,147,000).

### Flax (Fibre).

COUNTRIES	AREA					PRODUCTION								
	1932	1931	Aver. 1926 to 1930	% 1932		1932	1931	Aver. 1926 to 1930	1932	1931	Aver. 1926 to 1930	% 1932		
				1931	Aver- age							1931	Aver- age	
														= 100
			1,000 acres					1,000 centals				1,000 pounds		
*Germany .	11	16	38	68.1	29.6	1) 79	1) 117	—	1) 7 937	1) 11,684	—	67.9	—	
Austria †)	8	8	2) 10	95.9	74.4	106	107	2) 146	10,582	10,701	2) 14,592	98.9	72.5	
Belgium . .	21	36	59	57.7	35.4	151	254	542	15,078	25,370	54,180	59.4	27.8	
Bulgaria . .	1	2	1	56.2	160.6	2	2	2	154	176	152	87.6	101.6	
Estonia . .	36	45	83	80.0	43.8	84	131	208	8,449	13,056	20,826	64.7	40.6	
*Finland §)	11	10	11	112.5	101.5	...	...	28	...	...	2,845	...	...	
France . . .	23	26	79	90.8	29.5	149	138	589	14,941	13,788	58,875	108.4	25.4	
N.Ireland .	6	7	31	81.9	19.5	26	31	131	2,568	3,091	13,058	83.1	19.7	
Hungary . .	20	47	13	41.8	150.6	...	133	65	...	13,264	6,518	...	...	
Italy 4) . .	10	10	16	95.7	60.7	54	48	56	5,397	4,837	5,616	111.6	96.1	
Latvia . . .	78	104	150	75.5	52.3	209	287	440	20,877	28,660	43,955	72.8	47.5	
Lithuania §)	99	139	212	71.5	46.7	271	466	748	27,070	46,628	74,800	58.1	36.2	
Netherlands	5	16	37	29.9	13.1	31	99	252	3,086	9,918	25,153	31.1	12.3	
Poland . . .	232	252	281	91.9	82.6	564	756	1,191	56,438	75,611	119,097	74.6	47.4	
*Rumania . .	71	69	47	104.1	152.8	...	158	52	...	15,756	5,198	...	...	
Czechoslov.	16	22	46	73.7	35.3	72	75	206	7,443	7,469	20,608	97.0	35.1	
—														
*U.S.S.R. §)	6,202	5,779	3,457	107.3	179.4	...	12,026	7,410	...	1,202,626	740,958	...	...	
—														
*Egypt . . .	2	3	3	86.9	78.3	...	13	21	...	1,320	2,092	...	...	
TOTALS...	535	667	1,005	80.0	52.9	1,719	2,394	4,511	171,883	239,305	450,912	71.8	38.2	

\* Countries not included in the totals. — †) Production expressed in terms of dried flax straw. — ‡) Private estimate. — §) Average 1927 to 1930. — §) Flax and hemp. — 4) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — §) Dolgometz quality.



*United States* : According to the official annual outlook report flaxseed production in the United States in 1932 is reported to be well below prospective 1932-33 domestic requirements

*India* : Variable rains fell in the latter half of January in Bihar and Orissa; standing crops were in good condition On 14 January the condition of standing crops in the United Provinces was below the average Frost caused damage in some districts. In the Central Provinces linseed harvesting commenced after the middle of the month in Nagpur

### Linseed.

COUNTRIES	AREA						†) PRODUCTION							
	1932	1931	Aver 1926 to 1930	% 1932 — 1932/33			1932	1931	Aver 1926 to 1930	1932	1931	Aver. 1926 to 1930	% 1932 — 1932/33	
	—	—	—	—	—		—	—	—	—	—	—	—	—
	1932/33	1931/32	1926/27 to 1930/31	1931/1932	Average		1932/33	1931/32	1926/27 to 1930/31	1932/33	1931/32	1926/27 to 1930/31	1931/1932	Average
	1,000 acres			= 100	= 100		1,000 centals			1,000 bushels			= 100	= 100
*Germany	11	16	38	68.1	29.6	**)	50	**)	73	—	89	**)	130	—
Austria	5	5	7	95.8	70.3		20		19	24	36		33	43
Belgium	21	36	59	57.7	35.4		113		182	279	202		326	498
Bulgaria	1	2	1	56.2	160.6		6		11	2	11		19	3
Estonia	36	45	83	80.0	43.8		86		141	223	153		253	398
France.	23	26	79	90.8	29.5		122		130	411	218		233	735
Italy 1) . .	18	18	28	97.1	62.9		105		103	175	188		184	312
Latvia	78	104	150	75.5	52.3		205		279	411	366		499	735
Lithuania 2)	99	139	212	71.5	46.7		315		562	810	563		1,003	1,446
*Poland	232	252	281	91.9	82.6				1,087	1,467			1,941	2,620
*Rumania .	71	69	47	104.1	152.8				293	156			523	279
Czechoslov	16	22	46	73.6	35.3		53		56	164	95		100	293
*U.S.S.R	3) 7,347	7,574	4,528	—	—		...		13,135	..	..		23,456	...
Canada	454	627	511	72.4	88.8		1,370		1,380	2,422	2,446		2,465	4,325
United St	2,087	2,416	3,040	86.4	68.7		6,631		6,607	11,458	11,841		11,798	20,461
India .	3 241	3,008	3,224	107.7	100.5		9,206		8,445	8,355	16,440		15,080	14,920
Egypt	2	3	3	86.9	78.3		16		20	23	28		36	42
*French Mor	61	89	50	68.6	122.4				522	252	...		932	450
Argentina	4) 7,401	4) 8,640	4) 7,178	85.7	103.1		29,277		49,878	41,461	52,281		89,068	74,037
*Uruguay .	487	443	270	110.0	180.1		...		2,709	1,593			4,837	2,845
TOTALS ...	13,482	15,091	14,621	89.4	92.2		47,525		67,813	66,218	84,868		121,097	118,248

\*) Countries not included in the totals. — \*\*) Unofficial estimate — †) The two dates given refer to the years in which the harvest took place in the northern and southern hemispheres respectively — 1) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey — 2) Flax and hemp — 3) Total area of 'dolgunetz' flax for fibre and flax for seed sown as on 20 June 1932. — 4) Area sown.

## HEMP

COUNTRIES	AREA					PRODUCTION				
	1932	1931	Average 1926 to 1930	% 1932		1932	1931	Average 1926 to 1930	% 1932	
				1931	Aver- age				1931	Aver- age
1,000 acres			= 100	= 100	1,000 pounds			= 100	= 100	

### Fibre.

Germany 1) . . . . .	1	1	2	107.3	35.3	—	—	—	—	—
Austria . . . . .	1	1	1	91.6	95.4	2) 1,631	2) 1,728	2) 3) 1,775	94.4	91.9
Bulgaria . . . . .	11	9	9	120.2	117.1	3,968	4,189	2,992	94.7	132.6
France . . . . .	6	9	12	61.4	47.6	5,143	9,240	10,283	95.7	50.0
Hungary 4) . . . . .	17	16	22	107.9	75.0	...	8,763	2,557	...	...
Italy 5) . . . . .	134	141	223	94.9	59.8	122,441	118,175	207,682	103.6	59.0
Poland . . . . .	79	76	76	103.2	104.2	22,267	31,773	44,585	70.1	49.9
Rumania . . . . .	118	120	100	97.9	117.8	...	60,048	38,397	...	...
Czechoslovakia . . . . .	19	20	24	93.4	79.7	13,134	9,189	14,270	142.9	92.0
U.S.S.R. . . . .	2,063	2,282	2,193	90.4	94.1	...	...	693,660	...	...
Syria and Lebanon	9	6	6	155.1	142.0	3,108	3,530	3,784	88.1	82.2

### Hempseed.

Austria . . . . .	6)	6)	1	81.6	56.6	154	156	229	99.0	67.3
Bulgaria . . . . .	11	9	9	120.2	117.1	4,189	3,668	2,397	114.2	174.8
France . . . . .	6	9	12	61.4	47.6	554	1,616	3,283	34.3	16.9
Hungary 4) . . . . .	17	16	22	107.9	75.0	...	5,493	8,925	...	...
Italy 5) . . . . .	—	—	—	—	—	5,368	3,582	7) 10,875	149.8	49.4
Poland . . . . .	79	76	76	103.2	104.2	...	47,102	45,597	...	...
Rumania . . . . .	118	120	100	97.9	117.8	...	50,079	19,979	...	...
Czechoslovakia . . . . .	19	21	24	93.5	79.7	8,357	6,097	10,385	137.1	80.5
U.S.S.R. . . . .	2,063	2,282	2,193	90.4	94.1	...	...	1,006,907	...	...

1) Hemp and other textile plants. — 2) Production expressed in terms of air-dried stalks. — 3) Average 1927-30. — 4) Unmixed crops. — 5) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 6) Area of less than 500 acres. — 7) Year 1930.

## HOPS

The progressive reduction in cultivated areas since 1928 continued in 1932. The price crisis due to overproduction, aggravated in the last years by a considerable diminution in beer consumption in the principal producing countries, has led growers increasingly to restrict the area under the crop and this year the decline in production is still more marked.

In comparison with the corresponding data for 1931 and 1929 — a year in which the crop attained the highest figure since the war — the area and production in 1932 show for the principal producing countries and for the world as a whole the following changes:

	Percentage decrease (—) or increase (+)			
	of area in 1932 with reference to area in		of production in 1932 with reference to production in	
	1931	1929	1931	1929
Germany . . . . .	— 21.8	— 47.4	— 36.3	— 63.7
England and Wales . . . . .	— 15.3	— 31.1	+ 11.2	— 26.0
Czechoslovakia . . . . .	— 20.9	— 42.2	— 39.5	— 49.3
United States . . . . .	+ 2.8	— 9.8	— 8.7	— 26.8
All producing countries . . . . .	— 16.7	— 39.4	— 14.4	— 49.0

*Area cultivated to hops*

(in acres)

COUNTRIES	1932	1931	1930	1929	1928	Average 1928-1932	Average 1923-1927	Average 1909-1913
Germany . . . . .	19,801	25,326	32,307	37,620	37,741	30,559	32,317	1) 54,789
Austria . . . . .	...	126	171	731	744	380	371	2,004
Belgium . . . . .	1,416	2,051	2,545	3,156	3,652	2,564	3,299	5,313
France . . . . .	4,574	5,894	7,517	10,510	11,515	8,002	10,663	17,073
England and Wales . . . .	16,532	19,529	19,996	23,987	23,804	20,770	25,129	33,797
Hungary . . . . .	442	566	573	576	655	562	153	2) 385
Poland . . . . .	—	—	—	6,264	8,678	5,954	4,618	10,969
Rumania . . . . .	...	210	175	264	146	201	—	—
Czechoslovakia . . . . .	23,873	30,194	38,450	41,331	39,624	34,694	23,762	38,507
Yugoslavia . . . . .	3,635	5,622	7,139	12,630	22,045	10,612	9,071	—
<i>Total Europe . . . .</i>	<i>76,000</i>	<i>94,000</i>	<i>114,000</i>	<i>137,000</i>	<i>149,000</i>	<i>114,000</i>	<i>109,000</i>	<i>175,000</i>
Canada . . . . .	...	924	949	1,164	1,050	1,002	630	3) 887
U. S. A. . . . .	22,000	21,400	19,499	24,400	26,201	22,700	20,908	4) 44,695
<i>Total America . . .</i>	<i>23,000</i>	<i>22,000</i>	<i>20,000</i>	<i>26,000</i>	<i>27,000</i>	<i>24,000</i>	<i>22,000</i>	<i>46,000</i>
WORLD TOTAL †) . . . .	<i>101,000</i>	<i>118,000</i>	<i>136,000</i>	<i>165,000</i>	<i>178,000</i>	<i>140,000</i>	<i>133,000</i>	<i>223,000</i>

†) The totals are rounded to thousands of acres and include also Australia and New Zealand.

\*) Figures partly estimated.

1) 1911 to 1913. — 2) 1911 to 1915. — 3) 1910 and 1911. — 4) 1909.

*Production of hops*

(in centals)

COUNTRIES	1932	1931	1930	1929	1928	Average 1928-1932	Average 1923-1927	Average 1909-1913
Germany . . . . .	1) 108,011	2) 137,018	243,665	300,745	184,457	194,779	102,930	2) 231,140
Austria . . . . .	...	441	622	2,632	2,522	1,332	1,228	7,220
Belgium . . . . .	15,313	11,484	29,610	43,700	48,742	29,770	50,030	70,085
France . . . . .	21,103	11,782	58,676	137,763	90,976	64,060	94,515	136,941
England and Wales . . . .	210,560	189,598	284,397	402,078	271,039	271,534	361,760	330,234
Hungary . . . . .	...	2,743	3,080	3,245	3,073	2,977	769	3) 1,521
Poland . . . . .	—	—	—	38,422	38,025	35,131	28,352	51,368
Rumania . . . . .	...	1,065	659	1,219	571	916	—	—
Czechoslovakia . . . . .	164,509	271,774	324,641	260,534	207,991	245,890	180,149	—
Yugoslavia . . . . .	18,186	34,990	38,731	100,648	115,386	64,949	43,200	—
<i>Total Europe . . . .</i>	<i>575,000</i>	<i>694,000</i>	<i>1,017,000</i>	<i>1,291,000</i>	<i>963,000</i>	<i>911,000</i>	<i>863,000</i>	<i>1,120,000</i>
Canada . . . . .	...	12,302	11,660	14,447	9,672	12,023	10,108	4) 11,233
U. S. A. . . . .	241,200	264,099	234,469	331,949	329,440	280,261	276,348	516,587
<i>Total America . . .</i>	<i>254,000</i>	<i>276,000</i>	<i>246,000</i>	<i>346,000</i>	<i>339,000</i>	<i>292,000</i>	<i>286,000</i>	<i>528,000</i>
WORLD TOTAL †) . . . .	<i>853,000</i>	<i>994,000</i>	<i>1,289,000</i>	<i>1,668,000</i>	<i>1,333,000</i>	<i>1,234,000</i>	<i>1,184,000</i>	<i>1,672,000</i>

†) The totals are rounded to thousands of centals and include also Australia and New Zealand.

\*) Figures partly estimated.

1) Non including not picked quantities: 34,502 centals in 1931 and 1,275 centals in 1932. — 2) 1911 to 1913. — 3) 1911 to 1915. — 4) 1910 and 1911.

Despite the progressive decline in production in 1930 and 1931, the fall in prices, which began in 1929, was intensified in 1930 and 1931 and in part of 1932 under the influence of heavy stocks from previous crops and of lessened demand on the part of the breweries. It may be recalled that in Germany beer production

decreased by 11 % from 1929 to 1930, by 23 % from 1930 to 1931 and by 17 % in the first nine months of 1932 in comparison with the corresponding period of 1931 ; that in Czechoslovakia the decrease was 2 % from 1929 to 1930, 9 % from 1930 to 1931 and 7 % in the first eleven months of 1932 in comparison with the corresponding period of 1931 and that in Great Britain and Northern Ireland the quantity paying excise duty declined from 1930 to 1932 by about 30 %.

The further reduction in hop production experienced in 1932 caused a revival of prices, to which governmental price-sustaining measures also contributed.

*Hop prices.*

DATES		PRICE AT ZATEC		PRICE AT NÜRNBERG	
		in Kř. per 50 Kg.	gold francs per quintal	in R. M. per 100 Kg.	gold francs per quintal
Average	1926 . . . . .	3,979.50	1,225.69	1,014.17	1,252.50
"	1927 . . . . .	5,355.50	1,033.49	855.83	1,056.95
"	1928 . . . . .	1,955.00	602.14	458.33	566.04
"	1929 . . . . .	1,061.50	326.94	260.17	321.31
"	1930 . . . . .	670.00	206.36	174.18	215.11
"	1931 . . . . .	334.04	102.88	96.77	118.50
January	1932 . . . . .	282.50	87.01	101.70	125.60
February	" . . . . .	257.50	79.31	95.00	117.32
March	" . . . . .	257.50	79.31	100.00	123.50
April	" . . . . .	277.50	85.47	109.00	134.61
May	" . . . . .	237.50	73.15	117.00	144.49
June	" . . . . .	237.50	73.15	124.00	153.14
July	" . . . . .	252.50	77.77	130.00	160.55
August	" . . . . .	262.50	80.85	124.00	153.14
September	" . . . . .	772.50	237.93	238.20	294.18
October	" . . . . .	759.50	233.93	419.00	517.46
November	" . . . . .	900.00	277.20	428.40	529.07
December	" . . . . .	980.00	301.84	430.00	531.05
Average 1932 . . .		456.42	140.58	201.33	248.68

Prices on the German and Czechoslovak markets at the end of 1932 were about four times as high as at the beginning of the year, when prices were almost at their lowest level.

E. AR. - K.

**TOBACCO**

*Italy* : In the first half of January seedbeds were prepared.

*United States* : According to the official annual report most of the factors affecting the outlook for tobacco in 1933 are adverse.

In the week ended on 18 January, tobacco seedbeds were being planted in Florida; stripping progressed in Maryland and the Lake region but dry weather hindered handling in Kentucky. Towards the end of the month the weather was generally favourable for handling.

*Santo Domingo* : The weather conditions have been generally favourable for tillage and sowing.

*India* : In the latter half of January rain and frost somewhat damaged the tobacco crop in two districts of Bihar and Orissa.

*Algeria* : Many sowings were damaged by frost in January.

*Nyasaland* : Early rains broke well and favoured planting operations, but to avoid overproduction both European and native growers restricted their plantings.

*Southern Rhodesia* : Planting was favoured by weather conditions.

### Tobacco.

COUNTRIES	AREA					PRODUCTION				
	1932	1931	Average 1926 to 1930	% 1932		1932	1931	Average 1926 to 1930	% 1932	
				1931	Aver- age				1931	Aver- age
1,000 acres			= 100	= 100	1,000 pounds			= 100	= 100	
*Germany . . . . .	27	26	22	104.5	121.4	...	1) 51,105	45,013	...	...
Belgium . . . . .	7	7	7	94.2	89.8	13,688	14,469	15,026	94.6	91.1
Bulgaria . . . . .	47	77	73	61.3	64.3	31,306	54,784	54,836	57.1	57.1
Spain . . . . .	12	9	7	138.4	186.5	13,228	12,991	7,931	101.8	166.8
Greece . . . . .	153	209	229	73.1	66.5	57,978	95,274	140,189	60.9	41.4
*Hungary . . . . .	57	62	56	91.5	101.3	...	80,404	65,104	...	...
Italy . . . . .	99	103	97	95.8	101.6	95,593	103,031	98,027	92.8	97.5
*Rumania . . . . .	25	40	76	63.6	33.3	...	24,926	45,829	...	...
Czechoslovakia . .	25	22	15	110.4	163.6	33,069	30,495	17,729	108.4	186.5
*U.S.S.R. . . . .	449	450	222	99.7	202.0	...	...	320,968	...	...
United States . .	1,433	2,016	1,847	71.1	77.6	1,033,330	1,604,226	1,413,783	64.4	73.1
Japan . . . . .	84	90	90	92.5	92.6	138,230	155,757	143,138	88.7	96.6
Syria and Lebanon .	11	19	8	56.1	137.4	4,255	11,671	5,103	36.5	83.4
Algeria . . . . .	52	57	61	91.5	85.6	39,683	* 39,863	49,852	99.6	79.6
TOTALS . . . . .	1,923	2,609	2,434	73.6	78.9	1,460,360	2,122,561	1,945,614	68.8	75.1

\* Countries not included in the totals. — 1) Production for sale.

### OTHER PRODUCTS

#### Cacao.

*Brazil* : Entries of cacao by rail in the Ilheos and Rio de Contas zones in December were considerably heavier than in the two preceding months, although below those of the previous year.

	December 1932	May to December 1932	December 1931	May to December 1931
Ilheos zone (1000 lb.) . . . . .	14,782	87,581	16,998	70,354
Rio de Contas zone (1000 lb.) . . . . .	2,414	12,699	860	3,655

In the following month entries were also below those of the corresponding month in the previous season.

	January 1933	May 1932 to January 1933	January 1932	May 1931 to January 1932
Ilheos zone (1000 lb.) . . . . .	9,722	97,307	11,244	81,598
Rio de Contas zone (1000 lb.) . . . . .	1,653	14,352	1,984	5,639

Collection of the crop was nearly completed and it was not expected that entries at Ilheos would continue on a large scale after the end of February. In December it

was reported that owing to cacao having been held up-country there had been some deterioration in quality. Weather in December and January was dry, the rainfall at Ilheos having been 2.75 inches and 2.5 inches respectively, against averages of 7.35 inches and 6.38 inches.

Prospects for the 1933-34 crop were satisfactory and flowering was reported to be good.

*Santo Domingo* : Weather favoured the winter crop, which has given good results.

*Trinidad* : Pickings up to the end of December were fair in quantity. In Tobago the crop has been very good and prospects of a spring crop were good. The market situation continued to deteriorate.

*Gold Coast* : Information received from the districts during December gave no grounds for altering the estimate of 430 million pounds for the current major crop. The forecast of an early crop has been confirmed. For the October-December quarter exports were 36 % greater than last season, railway offloadings at Accra and Takaradi 22 % greater and railway onloadings at ten major stations 18 % greater while tonnage passing through gate-checks on roads from 1 September to 31 December was 38 % greater than for the corresponding period last season.

The bulk of the crop had ripened by the end of December and harvesting was expected to be completed in January save in Huhunya, where only 80 % of the crop was expected to be ripe by the end of that month. Very good drying weather had been experienced all over the cacao areas and some 80 % of the crop had been marketed by growers.

## Tea.

*India* : In North India the weather during December was cold and seasonable. Some rain fell in different districts. Practically the whole of the season's crop had been harvested. Statistics to the end of December recorded an increase of 31 million lb. as compared with the outturn to the same date of last year.

In South India dry, seasonable weather was experienced and the crop was about normal for December. Crop prospects were fair. The outturn was 11.36 % ahead of that to the same date of last year.

*French Indo-China* : The crop in October and November was normal in Tonkin and fairly large in Annam.

*Nyasaland* : The bushes are reported to have flushed well and output to be very good both in quantity and quality. Returns for the second month of the plucking season were excellent.

## Coffee.

*Mexico* : Picking was carried out under good conditions and yields were generally satisfactory.

*Nicaragua* : The current crop is very large, thanks to particularly favourable weather in the principal producing areas.

*Puerto Rico* : It is estimated that the 1932-33 coffee crop will reach 9,500,000 pounds, or about twice the amount harvested in 1931-32. It is not expected, however, that there will be a sufficient surplus over local consumption to cause any great increase in export this year.

*Santo Domingo* : Yields have been good. Total production is estimated to be over that of last year and to be of good quality.

*Venezuela* : The excessive precipitation in several areas caused serious losses and a production lower than that of last year is expected.

*French Indo-China* : The crop in Tonkin has been bad both as regards *arabica* and *robusta* kinds ; in Annam the yield of the berries was poor.

*Kenya* : Production of coffee in 1931-32 is estimated at 320,000 centals, as against 203,000 in 1931-32 and 234,000, the average for the previous quinquennium. Percentages : 158.0 and 136.8.

*Madagascar* : According to private sources the agricultural department estimates 1932-33 production (May-February) at 287,000 centals, an increase of 13 % on that of 1931,32, which was a record, since with 254,000 centals it was 69 % greater than that of the preceding season, which was normal ; the present crop is almost double the average of the five years ending 1930-31.

The number of bushes is at present about 40 millions ; in 1931-32 the area cultivated was estimated at 153,000 acres but in the previous season it was only 129,000 acres ; such figures as exist for previous seasons do not seem suitable as a basis of comparison but it is certain that coffee culture has undergone a considerable extension in recent years, particularly as regards *robusta* and, to a less extent, *k-uilu* and *camphora*.

Exports, encouraged by a bonus for the purpose of compensating for the low prices, attained in 1931 the very considerable total of 249,000 centals, almost entirely directed to France. Efforts are being made to standardize and improve quality.

## Groundnuts.

*United States* : According to the official annual outlook report the acreage of groundnuts this year is expected to be about as large as that of 1932, even though returns to growers last year were less than from competing cash crops.

In the week ended on 18 January many groundnuts in Virginia were damaged by continued wet weather.

*Java and Madura* : According to the most recent estimate, production of groundnuts this year will be about 356,930 thousand pounds against 311,955 in 1931-32 and 343,481 in the average of the five years ending 1930-31. Percentages 114 % and 104 %.

## Colza and sesame.

*Austria* : Due to night frosts winter colza has somewhat suffered. At the beginning of February crop condition was 2.6 against 2.4 on 1 January this year and 2.6 on 1 February 1932.

*Mexico* : Harvesting of sesame ended in the chief areas of production with yields below average.

*India* : Variable rains fell in the latter half of January in Bihar and Orissa ; standing crops were in good condition. In the Punjab the condition of standing crops on 30

January varied from average to good on irrigated areas and from below the average to average on unirrigated areas. Rapeseed was affected by severe cold weather in the southwest of the Punjab.

### Jute.

*India* : In Bengal tilling was making progress at the end of January.

### Sericulture.

*French Indo-China* : Rearings in Tonkin and Annam were affected by bad weather in October and November ; in Cambodia they were satisfactory at the end of November thanks to the abundant leafing of the mulberries.

COUNTRIES	QUANTITIES OF EGGS PREPARED FOR INCUBATION					PRODUCTION OF COCOONS				
	1932	1931	Average 1926 to 1930	% 1932		1932	1931	Average 1926 to 1930	% 1932	
				1931	Aver- age				1931	Aver- age
1,000 ounces				= 100	= 100	1,000 pounds			= 100	= 100
Bulgaria . . . . .	28	22	43	122.9	64.0	2,866	2,446	4,741	117.2	60.5
Spain . . . . .	13	...	27	—	47.2	1,199	1,160	1,938	103.3	61.9
France . . . . .	18	20	55	91.0	33.2	2,162	2,197	6,088	98.4	35.5
Italy . . . . .	582	701	982	83.0	59.3	70,548	75,968	111,278	92.9	63.4
Cyprus . . . . .	...	3	5	—	—	359	423	535	84.7	67.1
Korea . . . . . s)	227	219	196	103.5	115.8	29,273	28,662	22,437	102.1	130.5
Japan . . . . . s)	2,751	2,806	2,615	98.0	105.2	383,441	435,419	407,819	88.1	94.0
Syria and Lebanon	3,136	3,158	3,534	99.3	88.7	356,811	367,114	385,838	97.2	92.5
	60	79	99	76.0	60.8	4,575	6,085	7,315	75.2	62.5
TOTALS . . . s)	6,818	7,021	7,556	97.1	90.3	851,234	919,474	947,989	92.6	89.8

s) The totals take into account the probable quantities of eggs placed in incubation in the few countries for which estimates of cocoon production but not those of the former are so far available. — s) Spring cocoons. — t) Summer-autumn cocoons.

## FODDER CROPS

*Austria* : In the latter half of January clover suffered somewhat from night frosts. At the beginning of February condition of the various fodder crops was as follows : red clover 2.6 (against 2.5 on 1 January 1933 and 2.8 on 1 February 1932); alfalfa 2.6 (2.7, 2.6); mixed clover 2.5 (2.6, 2.5); permanent meadows 2.6 (2.7, 2.6) and pasture 2.5 (2.6, 2.8).

*Estonia* : Due to the summer drought and the reduction in the area sown production of fodder crops was smaller than last year and fodder supplies for dairy cattle are consequently less abundant than a year ago ; this will have its effects on dairy production.

*Irish Free State* : Despite the exceptionally severe weather in January, with rain, snow and frost, seasonal operations at the end of the month were more advanced than at the corresponding date last year.



*Great Britain and Northern Ireland*: During the early part of January weather was generally mild with some rain but in the latter part of the month there was a spell of severe cold with some snow in the north of England and in Scotland and Northern Ireland. In Scotland pastures were frozen hard during the last two weeks of the month and turnips were somewhat affected by frost. Until the frost set in progress was made with cultivation generally but subsequently outdoor work was limited to carting manure and hedging. In view, however, of the progress made earlier in the winter, work on the land was at the end of January as forward as usual. The frost should prove beneficial to the arable land intended for spring cultivation.

The production of turnips and mangolds in Northern Ireland is as follows, the 1932 figures being calculated from the official estimates of unit yields:

		1932	1931	Average 1926-30	Percentage 1932 1931 = 100	Average = 100
Turnips .	(ooo centals). . . . .	14,354	12,163	17,684	118.0	81.2
	(ooo sh. tons). . . . .	718	608	884		
Mangolds	(ooo centals). . . . .	324	282	485	114.8	66.7
	(ooo sh. tons). . . . .	16	14	24		

*Hungary*: Toward 20 February supplies of fodder were in places much reduced but yet sufficient for the winter. Health was satisfactory.

*Italy*: Cutting of autumn-winter grass, fertilizing meadows and irrigation of the *marcite* were carried out as usual in the first half of January.

Fodder supplies are in general sufficient for the needs of livestock.

In the following table is indicated the production of fodder crops in terms of ordinary hay compared with that of 1931 and the average for 1926-1930:

	1932	1931	Average 1926-30	Percentage 1932 1931 = 100	Average = 100
<i>Thousands of centals.</i>					
Temporary meadows . . . . .	292,352	209,651	231,394	139.4	126.3
Grass . . . . .	47,926	36,035	33,413	133.0	143.4
Unirrigated permanent meadows. .	74,596	66,814	71,456	111.6	104.4
Irrigated permanent meadows. .	51,500	50,695	49,117	101.6	104.9
Permanent pastures . . . . .	55,394	50,720	59,917	109.2	92.4
Accessory fodder production . .	114,994	89,773	81,977	128.1	140.3
Total . . .	<u>636,762</u>	<u>503,688</u>	<u>527,274</u>	<u>126.4</u>	<u>120.8</u>

<i>Thousands of short tons.</i>					
Temporary meadows . . . . .	14,617	10,482	11,570	139.4	126.3
Grass . . . . .	2,396	1,802	1,671	133.0	143.4
Unirrigated permanent meadows	3,730	3,341	3,573	111.6	104.4
Irrigated permanent meadows. .	2,575	2,535	2,456	101.6	104.9
Permanent pastures . . . . .	2,770	2,536	2,996	109.2	92.4
Accessory fodder production . .	5,750	4,489	4,099	128.1	140.3
Total . . .	<u>31,838</u>	<u>25,185</u>	<u>26,365</u>	<u>126.4</u>	<u>120.8</u>

*Canada* : The following are the final data of area and production of some of the chief fodder crops :

	1932	1931	Average 1926-30	% 1931 = 100	% 1932 Average = 100
<i>Area</i> (ooo acres).					
Hay and clover . . . . .	8,812	8,532	10,248	103.3	86.0
Alfalfa . . . . .	666	557	829	119.5	80.4
Grain hay . . . . .	1,900	1,800	1,706	105.5	111.3
Turnips, etc. . . . .	175	151	206	115.8	84.9
<i>Production.</i>					
Hay and clover	(ooo centals) . . 271,180	279,200	320,692	97.1	84.6
	(ooo sh. tons) . . 13,559	13,960	16,035		
Alfalfa . . . . .	(ooo centals) . . 35,270	27,760	38,812	127.1	90.9
	(ooo sh. tons) . . 1,763	1,388	1,941		
Grain hay . . . . .	(ooo centals) . . 66,840	72,260	71,740	92.5	93.2
	(ooo sh. tons) . . 3,342	3,613	3,587		
Turnips, etc. . . . .	(ooo centals) . . 37,766	29,392	38,480	128.5	98.1
	(ooo sh. tons) . . 1,888	1,470	1,924		

Large increases took place in 1932 in the area and production of alfalfa and turnips and yield per acre were quite satisfactory compared with 1931 ; production still remained, however, below the average. Decreases were recorded in the production of hay and clover and grain hay compared with both 1931 and the average.

*United States* : According to the official annual outlook report, supplies of alfalfa, sweet clover and alsike clover seeds are reported as being much lower than usual and may be nearly absorbed this spring.

At the beginning of February pastures varied from poor to excellent for the season east of the Mississippi River. January weather was on the whole favourable with mild temperatures and humid conditions in many areas.

*Palestine* : An improvement of growth is noted in Northern and Southern Circles in oat and vetch mixtures for forage. The third cutting of irrigated *bersim* crops has been made. Dry sown crops are poor.

*Egypt* : Weather conditions in January were not quite favourable to growth of *bersim* (clover), particularly in late-sown areas, retarding growth in a slight measure and causing the ends of some of the leaves to turn red in colour. The second cutting is being taken from early-sown areas and the first cutting from normal as well as late-sown areas. Crop condition on 1 February was 99, against 100 in January 1933 and February 1933.

*French Morocco* : The autumn drought diminished water courses and lowered the water-level but the heavy precipitation of December very appreciably improved the situation.

Meadow grass was almost sufficient in all districts in January but rather watery ; pastures were still far from adequate.

## LIVESTOCK AND DERIVATIVES

## Livestock in Germany.

In the following table are given provisional data of the last annual census with the data of the five preceding years and of 1913 for comparison. As regards pigs the details already published in January are unchanged and are not repeated here; the total shows a small change consequent on the latest corrections.

*Numbers of Livestock in Germany* <sup>(1)</sup>

(thousands)

CATEGORIES	1 Dec.	1 Dec.	1 Dec.	2 Dec.	1 Dec.	1 Dec.	1 Dec.	% 1932	
	1932	1931	1930	1929	1928	1927	1923 1)	1931 = 100	1913 = 100
Horses (2) . . . . .	3,392	3,451	3,522	3,617	3,718	3,810	3) 3,807	98.3	89.1
of which:									
Horses under 1 year old . . .	137	130	127	135	129	130	...	105.4	...
Horses from 1 to 5 years old .	549	563	644	740	866	999	...	97.5	...
Horses from 5 to 9 years old .	1,078	1,185	1,261	1,303	1,259	1,176	...	91.0	...
Horses 9 years old and over .	1,629	1,573	1,490	1,439	1,464	1,505	...	103.6	...
Asses and mules . . . . .	14	16	19	21	24	...	4) 10	87.5	...
Cattle . . . . .	19,123	19,124	18,470	18,033	18,414	18,011	18,474	100.0	103.5
of which:									
Calves under 3 months old . .	1,483	1,618	1,648	1,512	1,551	1,591	1,684	91.7	88.1
Young cattle from 3 months to 2 years old . . . . .	5,959	6,147	5,619	5,422	5,658	5,342	5,449	96.9	109.4
Oxen and bulls 2 years old and over . . . . .	866	767	761	743	789	789	1,369	112.9	63.3
Cows and heifers of 2 years old and over . . . . .	10,815	10,592	10,442	10,356	10,416	10,288	9,973	102.1	108.4
of which:									
Milk cows for milk . . . . .	7,331	7,264	7,112	7,075	7,060	6,935	...	100.9	...
Milk cows for milk and work.	2,455	2,395	2,342	2,322	2,413	2,458	...	102.5	...
Pigs . . . . .	22,814	23,808	23,442	19,944	20,106	22,899	22,533	95.8	101.2
Sheep . . . . .	3,401	3,499	3,504	3,480	3,635	3,819	4,988	97.2	68.2
of which:									
Ewes 1 year old and over . .	2,120	2,198	2,180	2,191	2,262	2,379	...	96.5	.
Goats . . . . .	2,500	2,516	2,581	2,625	2,890	3,225	3,164	99.4	79.0
of which:									
Goats 1 year old and over . .	2,013	2,053	2,120	2,222	2,460	2,711	...	98.1	...
Poultry . . . . .	93,428	93,499	98,232	92,154	84,509	79,418	4) 71,907	100.0	129.9
of which:									
Geese . . . . .	5,785	5,685	6,246	5,564	5,656	5,505	5,851	101.8	98.9
Ducks . . . . .	3,524	3,540	3,882	3,316	2,850	2,563	2,086	99.5	168.9
Fowls . . . . .	84,119	84,224	88,104	83,274	76,003	71,350	63,970	99.9	131.5
of which:									
Laying hens . . . . .	68,319	67,964	69,908	66,464	62,800	61,427	...	100.5	...
Beehives (number) . . . . .	1,904	1,872	2,002	1,728	1,624	1,639	4) 2,299	101.7	82.8

(1) Present territory, not including the Saar. — (2) Not including army horses, which numbered 40,531 in 1932, 40,61 in 1931, 40,649 in 1930, 40,487 in 1929 and 1928 and 40,465 in 1927. — (3) Including army horses. — (4) 1912.

Despite the limitation and the actual decrease generally experienced as regards the import of animals and animal products the decline in numbers in the last year

has been practically general. The figure for horses shows, though less markedly, a further decline; the number of foals under one year old on 1 December 1932 was however, relatively high, as was to be expected from the fairly large number of older horses.

The number of cattle on 1 December 1932 was little smaller than that on the same date of the previous year. While the number of milch cows shows a further increase, that of cattle from three months to two years old and especially that of calves have decreased, the former by 3.1 % and the latter by 8.3 %. Due to the unfavourable situation of the livestock industry slaughterings of young cattle and calves were last year very large.

Sheeprearing, which in recent years, with an interruption in 1930, has declined steadily, shows a further decline in 1932. In comparison with the figure for 1913 the decline in this branch of the livestock industry is especially heavy (31.8 %). A similar situation holds for goatrearing.

The total of poultry according to the last enumeration has declined only slightly from that of 1931 and is still almost 30 % greater than that of 1913. Amongst the individual species geese have increased since the end of 1931 while ducks and fowls have decreased. The number of geese remains, therefore, in contradistinction to those of the two other species, lower than the corresponding number in 1913. The increase in laying hens is in response to the heavier demand for eggs that in 1932 led to an increase, even though only a small one, in the import of eggs.

The number of beehives increased during the past year.

### Livestock in Lithuania.

In the following table are reproduced the numbers of livestock on 30 December 1932 compared with those in the two preceding years.

	30-XII 1932	30-XII 1931	30-XII 1930	% 1932 1931 = 100	% 1932 1930 = 100
Horses . . . . .	589,200	592,350	561,725	99.5	104.9
Cattle . . . . .	1,154,060	1,120,520	1,033,787	103.0	111.6
of which milch cows . . . . .	716,180	693,420	654,032	104.7	111.0
Sheep . . . . .	625,210	605,890	603,597	103.2	103.6
Pigs . . . . .	1,233,420	1,338,350	1,207,177	92.2	102.2
Poultry . . . . .					
Fowls . . . . .	3,524,510	3,740,640	3,259,892	94.2	108.1
Geese . . . . .	275,930	241,570	211,877	114.2	130.2

### Livestock in Canada.

The numbers of livestock in Canada in June 1932 compared with the corresponding figures for the preceding five years are as follows:

	1932	1931	1930	1929	1928	1927
	(thousands)					
<i>Horses</i> . . . . .	3,089	3,129	3,295	3,377	3,376	3,422
Stallions . . . . .	12	...	20	21	21	23
Mares . . . . .	1,463	...	1,556	1,606	1,604	1,619
Geldings . . . . .	1,329	...	1,407	1,447	1,456	1,477
Colts and fillies under 2 years .	285	...	312	303	295	303
<i>Mules</i> . . . . .	...	6	6	6	6	5
<i>Cattle</i> . . . . .	8,511	7,991	8,937	8,825	8,772	9,150
Bulls 1 year old and over . .	272	...	286	265	271	269
Cows kept mainly for milk . (1)	3,725	3,513	3,683	3,685	3,782	3,883
Calves . . . . .	2,003	...	1,935	1,990	1,907	1,812
Other cattle . . . . .	2,511	...	3,033	2,885	2,812	3,186
<i>Sheep</i> . . . . .	3,644	3,608	3,696	3,636	3,416	3,263
Sheep . . . . .	1,982	...	2,015	1,885	1,910	1,809
Lambs . . . . .	1,662	...	1,681	1,751	1,506	1,454
<i>Goats</i> . . . . .	...	...	13	13	12	11
Goats in milking . . . . .	...	...	5	5	4	4
Goats not in milking . . . .	...	...	8	8	8	7
<i>Swine</i> . . . . . (2)	4,639	4,717	4,000	4,382	4,497	4,695
Brood sows . . . . .	...	...	507	537	550	577
Other live pigs . . . . .	...	...	3,493	3,845	3,947	4,118
<i>Poultry</i> . . . . .	64,080	65,468	60,795	59,933	53,780	50,178
Hens, etc. . . . .	59,843	61,572	56,247	55,243	49,593	46,172
Turkeys . . . . .	2,478	2,232	2,399	2,423	2,066	1,890
Geese . . . . .	948	904	1,160	1,155	1,125	1,135
Ducks . . . . .	811	760	989	1,112	996	981
<i>Rabbits</i> . . . . .	...	...	56	53	49	47

1) Includes beef animals in Manitoba.

2) Of which 3,276,100 head under 6 months and 1,363,000 over 6 months old.

These figures do not include the numbers of livestock on Indian Reserves which were as follows for the years 1927-1932.

*Numbers of Livestock on Indian Reserves 1927-1932.*

	1932	1931	1930	1929	1928	1927
	(thousands)					
Horses . . . . .	38	41	37	40	36	38
Cattle . . . . .	45	46	45	43	44	48
Sheep . . . . .	3	4	3	3	3	3
Swine . . . . .	13	8	10	14	10	11
Poultry . . . . .	136	143	144	171	130	142

The number of horses shows a further, though smaller, decline in 1932. Pigs also have decreased in numbers since 1931 but remain at a fairly high level compared with recent years. The number of sheep has fluctuated since 1929 but remains at a fairly constant level, rather higher than that of 1927 and 1928. There has occurred a recovery in the number of cattle since 1931 but the figure is still below any of those for the period 1927 to 1930. The total number of poultry still remains at a comparatively high level due to the large proportion of hens and chickens though these declined to some extent from 1931 to 1932; other poultry, however, all increased slightly in numbers in 1932.

**New Zealand lambing estimate.**

The following table gives the estimate of the current season's lambing, computed from estimated average percentages; corresponding figures for the six preceding years, together with the actual numbers of lambs tailed, are given for comparison.

YEARS	Number of breeding-ewes (thousands)	Estimated Average percentage of lambing	Estimated number of lambs (thousands)	Actual number of lambs tailed (thousands)
1932 . . . . .	17,063	88.82	15,156	...
1931 . . . . .	17,609	86.79	15,284	14,975
1930 . . . . .	17,564	83.77	14,714	14,528
1929 . . . . .	16,608	88.65	14,722	14,888
1928 . . . . .	15,534	86.09	13,373	13,856
1927 . . . . .	14,832	86.76	12,869	13,179
1926 . . . . .	13,948	84.57	11,795	12,070

The number of breeding ewes shows a decline for the first time since 1920. Due to falling prices, the rate of increase of this category already showed in 1931, however, a significant slowing down, the farmers being forced to increase sales to maintain their income and the number of ewes ready for slaughter having been allowed to accumulate. The lambing percentage has, however, continued to rise and at 88.82 % has attained a new record. Consequently the estimated number of lambs has fallen only slightly from that in 1931, which represented a bumper lamb crop. The large number of lambs ensures the full use of the spring

flush of grass. While in the preceding four seasons the lambing percentage was higher in the South Island than in the North Island, it is this season higher in the latter, where it has shown a sharp rise for the second season in succession.

### **Current information on livestock and derivatives.**

*Belgium* : The health of livestock and the economic situation remain good. Farmers are using fodder produced on the farm and purchasing little concentrated feed.

*Irish Free State* : At the end of January adequate supplies of fodder roots and grain were on hand on most farms to meet requirements to the end of the season.

Milk yields showed the usual seasonal decline but were considerably above those at the same period last year.

*France* : The severe cold in the second half of January caused a heavy decline in production of both butter and eggs. From the first week of February there was a marked rise in temperature and a return of mild, rainy weather.

*Great Britain and Northern Ireland* : During the cold spell in the latter half of January considerable demands were made on winter keep for outlying stock in England and Wales but supplies were considered at the end of the month to be adequate. In Scotland ample supplies of all classes of feeding-stuffs required for milk production were available at very moderate prices with the exception of wheat bran, which continued to be scarce ; in some areas the frosty condition of roots used for feeding dairy cows reduced the milk yield appreciably but the milk yield was generally, as in England and Wales and in Northern Ireland, not below the normal for the season. In Northern Ireland supplies of most feeding stuffs both home-grown and imported, were ample for requirements but hay appeared to be becoming scarce in a few areas ; the general tendency of farmers is toward greater use of home-grown feeding stuffs in livestock rations, a tendency in all probability due to the comparatively low prices for these commodities.

Store cattle in Northern Ireland were generally in good condition and health despite the rather severe weather since the opening of the year ; in the case of outlying animals it was found necessary to carry out hand-feeding on a larger scale than usual. Owing to the low prices obtainable for milk farmers in some districts do not appear to be giving the same attention as formerly to the care of dairy cattle.

*Netherlands* : The economic situation of the peasants does not, in general, permit the purchase of large quantities of concentrated feed so that in many cases recourse must be had to local fodder supplies which, fortunately, are abundant.

Milk production has varied greatly in the different provinces. Compared with last year's production it has increased a little in Friesland, Overijssel, Gelder and Northern Brabant, by 10 % in Groningen and by 10 to 15 % in Drenthe, whereas it has not changed in Utrecht, North Holland and South Holland and has decreased in Zeeland (5 to 10 %).

*United States* : In the last week of January livestock were in fair to good condition east of the Mississippi River. The weather was rather favourable in the Great Plains but not so favourable, with cold stormy weather, in the Rocky Mountain region though the range was generally fair to good. In the Pacific States considerable feeding was necessary.

*French Morocco* : Health was everywhere very satisfactory. Conditions in mid-January were generally only passable owing to the late growth of the grass and its poor nutritive value ; in some coastal areas only were conditions fairly good while in some parts of the interior they were distinctly mediocre.

The economic situation showed a slight improvement in January ; some interior markets were quite lively and prices had a distinct rising tendency.

*Union of South Africa* : In December little or no rain fell over the greater part of the Cape Province and severe drought prevailed in the northwestern districts, Bechuanaland, Griqualand West, some of the Karoo districts and the greater part of the northeastern area. Stock was in poor condition, grazing and water were scarce and losses heavy, Farmers were compelled to trek and grazing could be found only with difficulty. Blowfly was very general and severe.

Soaking rains fell throughout Natal, over the greater part of the Transvaal and in some of the northeastern districts of the Orange Free State. In Natal stock was in excellent condition. In the Transvaal, though veld was still short and stock rather weak in the western highveld, central and lowveld districts, conditions had already greatly improved.

In the Orange Free State conditions were most critical in the southeastern and southern districts on account of the continuous drought and scarcity of water and losses were reported.

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## LATEST NEWS.

*Formosa* : (Telegram of 24 February). In the northern sections the weather was cool and the growing conditions of the first crop rice on February were poor. In the southern sections the growth of rice was normal.

Growing conditions of sugar-cane for cutting this season were satisfactory on 1 February but those of the cane planted since last summer were only average.



## TRADE

COUNTRIES	DECEMBER				FIVE MONTHS (August 1-December 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1932	1931	1932	1931	1932	1931	1932	1931	1931-32	1931-32
<b>Wheat. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	267	322	0	0	1,133	2,943	0	0	5,688	0
Hungary . . . . .	73	873	0	0	1,479	6,219	0	0	7,912	0
Lithuania . . . . .	0	0	0	0	0	2	0	0	20	0
Poland . . . . .	20	24	73	143	79	220	282	262	1,598	346
Rumania . . . . .	...	...	...	...	24	18,096	4	2	21,202	7
U. S. S. R. . . . .	1,459	2,493	7	0	9,850	37,424	1,373	0	39,423	1,515
Yugoslavia . . . . .	119	681	0	0	430	6,292	0	0	8,796	0
Canada . . . . .	16,643	13,413	0	9	84,239	56,987	24	44	109,685	75
United States . . . . .	1,316	4,738	302	483	9,564	27,957	7,352	3,697	52,805	7,361
Argentina . . . . .	4,191	4,841	—	—	12,500	18,916	—	—	81,463	—
Chile . . . . .	...	...	...	...	4	0	238	0	9	0
Turkey . . . . .	13	64	0	0	49	265	0	0	913	0
Algeria . . . . .	666	278	192	141	3,521	1,501	558	822	4,837	1,462
Tunis . . . . .	291	128	46	51	2,207	1,539	240	196	5,337	401
Australia . . . . .	5,941	4,193	0	0	16,727	16,301	0	0	73,793	0
<i>Importing Countries:</i>										
Germany . . . . .	899	1,140	1,638	1,768	9,286	6,288	8,748	7,231	7,313	21,006
Austria . . . . .	0	0	639	913	0	0	2,330	3,040	0	6,418
Belgium . . . . .	22	121	2,729	2,641	840	1,964	10,928	14,418	3,587	31,478
Denmark . . . . .	0	0	511	864	13	9	3,155	5,393	9	8,719
Spain . . . . .	0	0	0	0	0	0	0	35	0	6,482
Estonia . . . . .	0	0	0	18	0	0	0	137	0	256
Irish Free State . . . . .	0	0	886	487	4	0	3,269	3,007	13	6,369
Finland . . . . .	0	0	108	37	0	0	485	212	0	428
France . . . . .	20	4	1,702	2,635	44	9	13,669	20,362	9	53,140
Gr. Brit. and N. Irel. . . . .	31	79	8,583	8,545	168	243	49,432	68,795	1,206	137,664
Greece . . . . .	0	0	1,012	1,065	0	0	5,040	5,895	0	14,116
Italy . . . . .	0	0	1,202	829	13	18	4,109	3,371	18	22,547
Latvia . . . . .	0	0	0	31	2	0	15	245	0	575
Norway . . . . .	0	0	443	317	0	0	1,422	1,501	0	3,294
Netherlands . . . . .	44	4	1,305	1,583	441	31	6,806	7,937	110	17,919
Portugal . . . . .	—	—	9	60	—	—	220	465	—	1,393
Sweden . . . . .	0	0	128	384	9	0	1,288	1,581	9	4,054
Switzerland . . . . .	0	2	849	1,360	11	2	5,342	6,530	18	12,683
Czechoslovakia . . . . .	0	0	139	1,519	2	2	542	6,607	4	13,199
India . . . . .	9	11	0	0	26	146	0	179	183	17,070
Japan . . . . .	—	—	1,133	1,089	—	—	3,829	4,440	—	511
Syria and Lebanon . . . . .	64	53	11	7	243	392	68	7	328	994
Egypt . . . . .	...	...	...	...	2	0	0	106	2	1,034
Union of South Africa . . . . .	...	...	...	...	0	0	128	500	0	258
New Zealand . . . . .	...	...	...	...	0	0	406	15	0	392,770
<b>Totals</b> . . . . .	<b>32,088</b>	<b>33,462</b>	<b>23,647</b>	<b>26,979</b>	<b>152,910</b>	<b>203,766</b>	<b>126,302</b>	<b>167,032</b>	<b>426,475</b>	<b>392,770</b>
<b>Rye. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	2	66	0	0	49	818	0	0	990	0
Hungary . . . . .	64	201	0	0	439	774	0	0	1,486	0
Lithuania . . . . .	0	0	0	0	2	0	0	2	9	2
Poland . . . . .	732	172	64	49	3,373	1,049	143	99	2,513	123
Rumania . . . . .	...	...	...	...	9	1,257	0	0	1,676	0
U. S. S. R. . . . .	917	4,599	—	—	3,479	17,915	—	—	23,640	—
Canada . . . . .	9	701	0	0	1,426	1,508	0	0	5,066	0
United States . . . . .	0	0	—	—	18	24	—	—	622	—
Argentina . . . . .	11	190	—	—	152	538	—	—	4,769	—
Turkey . . . . .	20	82	0	0	165	293	0	0	690	0
Algeria . . . . .	0	2	0	0	11	9	0	0	31	0
<i>Importing Countries:</i>										
Germany . . . . .	364	403	873	522	1,799	1,803	4,012	1,874	2,046	12,103
Austria . . . . .	0	0	4	236	0	0	110	756	0	1,728
Belgium . . . . .	13	18	434	143	146	216	1,283	1,151	639	2,709
Denmark . . . . .	0	0	573	525	0	0	3,247	2,692	0	4,731
Estonia . . . . .	0	0	0	0	0	0	0	7	0	13
Finland . . . . .	0	0	0	9	0	0	657	286	0	1,202
France . . . . .	0	0	46	146	0	0	267	767	0	1,737
Italy . . . . .	0	0	37	13	0	0	143	55	0	157
Latvia . . . . .	0	0	0	7	0	0	0	51	0	99
Norway . . . . .	0	0	62	414	0	0	1,257	1,790	—	3,415
Netherlands . . . . .	2	2	520	181	33	150	2,002	1,865	331	4,200
Sweden . . . . .	0	0	0	119	0	0	243	505	26	1,345
Switzerland . . . . .	0	0	57	4	0	0	187	44	0	108
Czechoslovakia . . . . .	18	0	2	946	46	4	90	3,655	7	5,124
<b>Totals</b> . . . . .	<b>2,152</b>	<b>6,436</b>	<b>2,672</b>	<b>3,314</b>	<b>11,147</b>	<b>26,358</b>	<b>13,641</b>	<b>15,595</b>	<b>44,541</b>	<b>38,796</b>

1) See notes page 131

COUNTRIES	DECEMBER				FIVE MONTHS (August 1-December 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1932	1931	1932	1931	1932	1931	1932	1931	1931-32	1931-32
<b>Wheat flour. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Germany . . . . .	212	13	9	20	430	33	29	79	64	229
Belgium . . . . .	4	4	7	4	24	31	42	35	73	51
Bulgaria . . . . .	7	53	0	0	46	317	0	0	752	0
Spain . . . . .	0	4	0	0	2	13	0	0	18	0
France . . . . .	302	597	40	11	1,521	3,034	220	115	4,764	262
Hungary . . . . .	130	364	0	0	556	1,373	0	0	2,130	0
Italy . . . . .	335	392	37	40	1,927	1,080	112	134	2,235	287
Latvia . . . . .	0	0	0	0	0	0	0	0	0	0
Lithuania . . . . .	2	4	0	0	9	13	0	0	26	0
Poland . . . . .	29	46	0	0	119	328	0	2	511	4
Rumania . . . . .	...	...	...	...	13	553	1)	1)	855	0
Yugoslavia . . . . .	7	24	0	0	35	51	0	0	104	0
Canada . . . . .	963	884	2	4	4,535	5,027	11	18	10,551	40
United States . . . . .	761	1,753	0	0	3,986	7,617	0	0	15,091	0
Argentina . . . . .	97	97	—	—	417	701	—	—	1,545	—
Chile . . . . .	...	...	...	...	4	7	1)	0	29	0
India . . . . .	40	84	0	0	196	403	0	0	636	0
Turkey . . . . .	0	0	0	0	0	0	0	4	11	4
Japan . . . . .	615	163	2	9	2,381	966	9	60	3,470	106
Algeria . . . . .	33	2	11	22	214	44	26	37	157	57
Tunis . . . . .	18	7	7	2	75	55	11	9	146	20
Australia . . . . .	1,074	1,012	0	0	4,755	6,451	0	0	13,995	0
<i>Importing Countries:</i>										
Austria . . . . .	0	2	73	152	0	7	293	500	7	1,279
Denmark . . . . .	0	0	86	134	7	7	348	675	13	1,290
Estonia . . . . .	0	0	0	2	2	9	0	11	11	15
Irish Free State . . . . .	0	2	99	353	0	13	974	1,704	26	4,045
Finland . . . . .	0	0	108	77	0	0	569	955	0	1,596
Gr. Brit. and N. Irel. . . . .	392	456	902	1,082	2,088	2,242	3,620	5,307	5,628	11,224
Greece . . . . .	0	0	2	11	0	0	13	46	0	66
Norway . . . . .	0	4	110	183	2	7	470	761	11	1,358
Netherlands . . . . .	0	4	77	55	13	37	359	395	71	723
Portugal . . . . .	—	—	24	9	—	—	143	86	—	201
Sweden . . . . .	0	0	0	4	0	0	4	18	0	37
Czechoslovakia . . . . .	0	0	2	121	4	4	130	514	9	1,182
Ceylon . . . . .	—	—	51	53	—	—	201	192	—	401
Java and Madura . . . . .	—	—	...	...	—	—	322	430	—	1,138
Indo-China . . . . .	—	—	...	...	—	—	119	141	—	388
Syria and Lebanon . . . . .	24	13	35	29	42	68	183	128	93	397
Egypt . . . . .	...	...	...	...	0	1)	117	1,177	0	2,430
Union of South Africa . . . . .	...	...	...	...	0	1)	2	1	2	15
New Zealand . . . . .	...	...	...	...	0	1)	90	71	4	238
<b>Totals . . . . .</b>	<b>5,045</b>	<b>5,984</b>	<b>1,684</b>	<b>2,377</b>	<b>23,403</b>	<b>30,493</b>	<b>8,416</b>	<b>13,611</b>	<b>63,238</b>	<b>29,083</b>

<b>Barley. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	0	44	0	0	60	375	0	0	406	0
Spain . . . . .	4	0	0	0	13	4	0	0	15	0
Hungary . . . . .	212	2	0	0	564	44	0	0	55	7
Lithuania . . . . .	0	0	0	0	2	0	0	0	0	0
Poland . . . . .	747	309	0	0	2,169	2,103	0	0	3,146	0
Rumania . . . . .	...	...	...	...	8,054	11,195	1)	1)	15,911	0
Czechoslovakia . . . . .	522	243	0	0	2,599	851	0	2	2,112	2
U. S. S. R. . . . .	1,146	2,121	—	—	6,363	15,124	—	—	17,789	—
Canada . . . . .	130	1,058	0	0	1,947	3,649	0	0	6,499	0
United States . . . . .	238	112	—	—	2,194	1,336	—	—	2,524	—
Argentina . . . . .	220	159	—	—	256	476	—	—	6,274	—
Chile . . . . .	...	...	...	...	4	42	1)	0	492	0
India . . . . .	0	181	0	0	2	183	0	0	666	0
Syria and Lebanon . . . . .	9	93	0	0	31	351	152	46	384	104
Turkey . . . . .	66	392	0	0	507	1,534	0	0	2,996	0
Egypt . . . . .	...	...	...	...	4	1)	0	187	2	273
Tunis . . . . .	161	2	4	35	1,947	119	26	467	820	556
Australia . . . . .	132	212	0	0	157	309	0	0	1,614	0
<i>Importing Countries:</i>										
Germany . . . . .	0	4	331	1,929	2	11	1,356	6,781	18	15,970
Austria . . . . .	0	0	196	306	0	0	869	1,202	0	2,075
Belgium . . . . .	22	172	1,250	1,091	734	681	4,987	5,007	1,676	9,396
Denmark . . . . .	29	62	351	262	198	265	1,082	2,059	474	3,331
Irish Free State . . . . .	0	7	0	46	2	22	9	60	26	483
France . . . . .	0	2	1,120	1,228	0	11	4,729	4,506	15	9,482
Gr. Brit. and N. Irel. . . . .	0	2	1,131	1,512	24	7	6,654	9,345	31	14,039
Greece . . . . .	0	0	0	2	0	0	2	7	0	172
Italy . . . . .	0	0	97	117	0	0	509	337	0	800
Latvia . . . . .	0	0	0	0	0	0	0	4	0	4
Norway . . . . .	0	0	9	146	0	0	82	454	0	794
Netherlands . . . . .	4	24	692	776	15	112	4,427	4,863	262	9,112
Switzerland . . . . .	0	0	639	514	0	0	2,509	1,550	2	2,989
Yugoslavia . . . . .	9	2	0	0	11	11	2	33	13	37
Algeria . . . . .	9	57	243	194	66	498	1,257	1,777	620	2,520
<b>Totals . . . . .</b>	<b>3,660</b>	<b>5,260</b>	<b>6,063</b>	<b>8,158</b>	<b>27,925</b>	<b>39,313</b>	<b>28,652</b>	<b>38,687</b>	<b>64,842</b>	<b>72,148</b>

1) See notes page 131.

COUNTRIES	DECEMBER				FIVE MONTHS (August 1-December 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1932	1931	1932	1931	1932	1931	1932	1931	1931-32	1931-32

<b>Oats. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . . . . .	2	7	0	0	15	44	9	134	73	220
Hungary . . . . .	11	0	0	2	22	2	0	2	7	2
Lithuania . . . . .	0	2	0	0	0	2	0	0	20	0
Poland . . . . .	7	4	0	0	24	15	0	0	62	0
Rumania . . . . .	...	...	...	...	595 <sup>1)</sup>	192 <sup>1)</sup>	0 <sup>1)</sup>	0	295	0
Czechoslovakia . . . . .	816	77	0	0	2,048	234	0	53	884	57
Yugoslavia . . . . .	0	0	0	0	0	0	0	0	2	0
Canada . . . . .	487	419	106	22	2,363	1,744	478	536	4,628	655
United States . . . . .	126	24	0	0	838	620	0	4	891	22
Argentina . . . . .	955	847	—	—	3,446	4,184	—	—	16,257	—
Chile . . . . .	...	...	...	...	97 <sup>1)</sup>	68 <sup>1)</sup>	0 <sup>1)</sup>	0	223	0
Algeria . . . . .	22	33	0	18	90	84	26	276	273	384
Tunis . . . . .	2	4	0	0	77	121	0	0	212	0
Australia . . . . .	4	7	0	0	73	24	0	0	108	2
<i>Importing Countries:</i>										
Germany . . . . .	0	2	51	9	0	4	75	170	9	223
Austria . . . . .	0	0	71	154	0	0	437	613	0	1,462
Belgium . . . . .	0	0	57	24	4	2	179	456	37	1,501
Denmark . . . . .	15	4	0	29	44	35	37	251	66	474
Estonia . . . . .	0	0	0	0	0	0	0	7	0	7
Finland . . . . .	0	4	22	0	2	11	33	40	20	55
France . . . . .	0	0	128	95	2	2	791	542	7	3,214
Gr. Brit. and N. Irel. . . . .	2	2	370	608	9	26	2,518	3,766	203	8,494
Italy . . . . .	0	0	203	481	0	0	1,157	1,437	0	4,074
Latvia . . . . .	0	0	0	2	0	0	0	7	0	7
Norway . . . . .	0	0	0	37	0	0	11	123	2	273
Netherlands . . . . .	2	7	344	203	4	24	1,071	895	44	2,381
Sweden . . . . .	2	0	9	66	20	2	213	626	181	1,157
Switzerland . . . . .	0	0	597	516	0	0	1,933	2,050	2	5,033
<b>Totals . . . . .</b>	<b>2,453</b>	<b>1,443</b>	<b>1,958</b>	<b>2,266</b>	<b>9,773</b>	<b>7,440</b>	<b>8,973</b>	<b>11,988</b>	<b>24,506</b>	<b>29,697</b>

<b>Maize. — Thousand cents (1 cental = 100 lb.).</b>										
					TWO MONTHS (November 1-December 31)				TWELVE MONTHS (Nov. 1-Oct. 31)	
<i>Exporting Countries:</i>										
Bulgaria . . . . .	410	245	0	0	1,109	291	0	0	2,890	0
Rumania . . . . .	...	...	...	...	5,503 <sup>1)</sup>	3,607 <sup>1)</sup>	0 <sup>1)</sup>	0	34,421	2
Yugoslavia . . . . .	1,554	238	0	2	2,641	379	0	15	1,825	26
United States . . . . .	357	40	18	33	1,618	287	31	57	3,084	220
Argentina . . . . .	7,546	16,925	—	—	18,151	38,927	—	—	175,473	—
Brazil . . . . .	...	...	—	—	0 <sup>1)</sup>	0 <sup>1)</sup>	—	—	2	—
Java and Madura . . . . .	40	79	—	—	57	123	—	—	2,467	—
Indo-China . . . . .	...	...	—	—	620 <sup>1)</sup>	364 <sup>1)</sup>	—	—	3,459	—
Syria and Lebanon . . . . .	2	2	2	2	4	4	13	4	7	37
Turkey . . . . .	4	2	0	0	11	7	0	0	373	0
Egypt . . . . .	...	...	...	...	9 <sup>1)</sup>	0 <sup>1)</sup>	0 <sup>1)</sup>	4 <sup>1)</sup>	15	46
Union of South Africa . . . . .	...	...	...	...	730 <sup>1)</sup>	789 <sup>1)</sup>	0 <sup>1)</sup>	0 <sup>1)</sup>	4,991	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	944	1,301	0	0	1,825	2,083	0	17,007
Austria . . . . .	0	0	1,407	802	0	0	2,363	1,400	0	7,621
Belgium . . . . .	15	46	2,037	2,035	79	86	3,803	3,657	1,385	18,691
Denmark . . . . .	0	0	2,147	2,249	0	0	3,230	3,596	0	21,233
Spain . . . . .	0	0	306	353	0	0	432	631	0	6,931
Irish Free State . . . . .	0	0	487	858	0	0	853	1,940	0	13,658
Finland . . . . .	0	0	75	35	0	0	126	106	0	582
France . . . . .	0	0	2,304	2,346	0	2	4,211	4,264	26	25,869
Gr. Brit. and N. Irel. . . . .	90	304	6,594	7,826	260	509	10,463	15,360	3,208	64,058
Greece . . . . .	0	0	22	37	0	0	33	68	0	3,382
Hungary . . . . .	348	13	0	24	509	37	0	55	93	939
Italy . . . . .	0	0	176	950	0	0	291	1,847	7	15,737
Norway . . . . .	0	0	143	300	0	0	304	1,021	0	4,092
Netherlands . . . . .	9	9	4,725	3,882	15	18	7,871	7,670	223	36,928
Poland . . . . .	0	0	4	22	0	0	11	33	0	126
Portugal . . . . .	—	—	115	157	—	—	287	262	—	1,407
Sweden . . . . .	0	0	344	758	0	0	582	1,343	0	6,083
Switzerland . . . . .	0	0	157	379	0	0	306	871	2	3,717
Czechoslovakia . . . . .	0	0	170	1,775	0	0	216	3,239	0	9,958
Canada . . . . .	4	2	536	675	18	4	2,026	1,779	13	3,891
Japan . . . . .	—	—	0	214	—	—	2	368	—	1,695
Tunis . . . . .	0	0	0	106	0	0	0	128	0	324
<b>Totals . . . . .</b>	<b>10,379</b>	<b>17,905</b>	<b>22,713</b>	<b>27,121</b>	<b>31,334</b>	<b>45,434</b>	<b>39,283</b>	<b>51,801</b>	<b>233,964</b>	<b>264,260</b>

1) See notes page 131.

COUNTRIES	DECEMBER				TWELVE MONTHS (January 1-December 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1932	1931	1932	1931	1932	1931	1932	1931	1931	1931
<b>Rice. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Spain . . . . .	64	126	0	0	871	833	0	0	—	—
Italy . . . . .	470	392	9	4	3,505	3,307	55	53	—	—
United States . . . . .	212	198	22	37	2,586	2,773	190	328	—	—
Brazil . . . . .	—	—	—	—	1) 606	1) 1,936	—	—	—	—
India . . . . .	2,606	3,554	99	22	48,001	48,442	683	589	—	—
Indo-China . . . . .	—	—	—	—	1) 24,527	1) 18,724	—	—	—	—
Slam . . . . .	2,932	2,568	—	—	34,106	25,029	—	—	—	—
Egypt . . . . .	—	—	—	—	1) 571	1) 644	1) 710	1) 747	—	—
<i>Importing Countries:</i>										
Germany . . . . .	51	93	511	798	1,047	1,373	8,481	8,962	—	—
Austria . . . . .	0	0	55	146	0	0	549	772	—	—
Belgium . . . . .	7	15	115	106	201	190	1,208	1,349	—	—
Denmark . . . . .	0	0	26	20	0	0	139	157	—	—
Estonia . . . . .	—	—	0	2	—	—	15	33	—	—
Irish Free State . . . . .	0	0	4	4	2	0	46	53	—	—
France . . . . .	97	55	721	637	864	937	8,327	6,777	—	—
Gr. Brit. and N. Irel. . . . .	7	15	209	207	163	271	2,747	2,687	—	—
Greece . . . . .	—	—	64	49	—	—	540	540	—	—
Hungary . . . . .	0	0	35	31	0	2	465	481	—	—
Latvia . . . . .	0	0	0	9	0	0	20	82	—	—
Lithuania . . . . .	0	0	2	2	0	0	20	117	—	—
Norway . . . . .	0	0	4	2	0	0	71	22	—	—
Netherlands . . . . .	148	152	108	64	1,863	2,480	2,784	4,963	—	—
Poland . . . . .	18	64	0	35	317	606	1,027	1,027	—	—
Portugal . . . . .	—	—	79	53	—	—	875	613	—	—
Sweden . . . . .	—	—	0	0	—	—	90	123	—	—
Switzerland . . . . .	0	0	49	46	0	0	432	454	—	—
Czechoslovakia . . . . .	0	0	128	132	0	0	1,096	1,127	—	—
Yugoslavia . . . . .	0	0	46	60	2	4	494	511	—	—
Canada . . . . .	0	0	20	37	9	0	593	710	—	—
Chile . . . . .	—	—	—	—	—	—	179	472	—	—
Ceylon . . . . .	0	2	955	833	4	9	10,386	10,196	—	—
Java and Madura . . . . .	—	—	—	—	1) 68	1) 229	1) 3,009	1) 5,814	—	—
Japan . . . . .	0	26	328	251	670	4,195	3,120	2,773	—	—
Syria and Lebanon . . . . .	0	0	55	31	0	0	392	322	—	—
Turkey . . . . .	0	0	9	9	0	0	93	183	—	—
Algeria . . . . .	0	0	22	44	9	2	198	179	—	—
Tunis . . . . .	0	0	2	2	0	0	40	31	—	—
Union of South Africa . . . . .	—	—	—	—	1) 0	1) 0	1) 811	1) 957	—	—
Australia . . . . .	4	22	2	2	86	161	49	29	—	—
New Zealand . . . . .	—	—	—	—	1) 0	1) 0	1) 60	1) 66	—	—
<b>Totals . . . . .</b>	<b>6,616</b>	<b>7,262</b>	<b>3,679</b>	<b>3,675</b>	<b>120,078</b>	<b>112,147</b>	<b>49,994</b>	<b>54,998</b>	<b>—</b>	<b>—</b>
<b>Linseed. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Estonia . . . . .	0	0	4	0	2	4	4	0	—	—
Lithuania . . . . .	18	26	0	0	170	247	0	0	—	—
Argentina . . . . .	3,001	2,919	—	—	44,403	41,661	—	—	—	—
India . . . . .	174	238	0	0	1,728	2,520	0	0	—	—
Tunis . . . . .	0	0	0	0	24	4	0	0	—	—
<i>Importing Countries:</i>										
Germany . . . . .	2	2	869	547	20	13	9,841	7,507	—	—
Belgium . . . . .	4	22	445	231	139	205	3,684	3,702	—	—
Denmark . . . . .	—	—	82	29	—	—	534	417	—	—
Spain . . . . .	—	—	29	71	—	—	518	465	—	—
Finland . . . . .	0	0	20	7	0	0	75	68	—	—
France . . . . .	0	2	732	421	7	18	5,187	5,814	—	—
Gr. Brit. and N. Irel. . . . .	0	0	441	511	4	4	8,294	7,599	—	—
Greece . . . . .	0	0	11	4	0	0	88	95	—	—
Hungary . . . . .	0	0	13	0	9	42	29	2	—	—
Italy . . . . .	0	0	203	97	0	0	1,512	1,351	—	—
Latvia . . . . .	20	18	7	4	53	106	75	90	—	—
Norway . . . . .	0	0	40	33	0	0	403	289	—	—
Netherlands . . . . .	2	0	690	542	75	49	9,912	9,253	—	—
Poland . . . . .	—	—	29	2	4	7	271	273	—	—
Sweden . . . . .	—	—	7	46	—	—	957	1,056	—	—
Czechoslovakia . . . . .	0	2	123	51	2	7	798	582	—	—
Yugoslavia . . . . .	0	0	15	0	0	0	115	126	—	—
Canada . . . . .	0	104	0	0	205	584	256	194	—	—
United States . . . . .	—	—	580	110	—	—	4,502	8,109	—	—
Japan . . . . .	—	—	22	18	—	—	148	185	—	—
Australia . . . . .	0	0	9	2	0	0	450	291	—	—
<b>Totals . . . . .</b>	<b>3,221</b>	<b>3,333</b>	<b>4,371</b>	<b>2,726</b>	<b>46,845</b>	<b>45,471</b>	<b>47,653</b>	<b>47,468</b>	<b>—</b>	<b>—</b>

1) See notes page 131.

COUNTRIES	DECEMBER				TWELVE MONTHS (January 1-December 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1932	1931	1932	1931	1932	1931	1932	1931	1931	1931
<b>Butter. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Austria . . . . .	258	209	2	4	1,565	2,862	802	1,565	—	—
Denmark . . . . .	28,041	30,146	15	123	347,886	378,429	952	1,596	—	—
Estonia . . . . .	1,045	1,279	0	0	27,626	31,844	0	0	—	—
Irish Free State . . . . .	853	492	0	55	36,932	42,307	2,632	3,325	—	—
Finland . . . . .	2,030	2,815	0	0	32,020	38,367	0	0	—	—
Hungary . . . . .	373	478	0	0	4,495	4,065	0	117	—	—
Latvia . . . . .	1,907	1,847	0	0	41,000	41,313	2	24	—	—
Lithuania . . . . .	635	567	0	0	21,883	19,191	0	0	—	—
Norway . . . . .	262	115	2	42	2,421	1,629	90	379	—	—
Netherlands . . . . .	7,178	4,076	165	1,944	44,926	72,660	9,323	8,887	—	—
Poland . . . . .	2	540	7	0	2,707	27,470	866	31	—	—
Sweden . . . . .	2,575	2,515	4	7	29,875	43,045	33	40	—	—
U. S. S. R. . . . .	—	—	—	—	3) 51,289	49,939	—	—	—	—
Argentina . . . . .	5,880	7,745	—	—	55,973	51,167	—	—	—	—
India . . . . .	26	44	33	29	260	366	428	344	—	—
Syria and Lebanon . . . . .	22	93	137	42	315	1,817	1,867	344	—	—
Australia . . . . .	30,620	24,527	—	—	229,105	208,924	—	—	—	—
New Zealand . . . . .	33,385	31,162	—	—	244,588	220,814	—	—	—	—
<i>Importing Countries:</i>										
Germany . . . . .	0	4	12,666	20,382	478	269	153,264	220,950	—	—
Belgium . . . . .	24	86	3,702	4,550	1,841	2,756	46,778	41,562	—	—
Spain . . . . .	2	2	4	42	44	88	42	121	—	—
France . . . . .	655	924	5,095	88	7,921	11,045	26,140	40,836	—	—
Gr. Brit. and N. Irel . . . . .	1,773	8,649	94,521	87,788	35,693	40,228	946,298	903,967	—	—
Greece . . . . .	—	—	66	229	—	—	1,197	2,059	—	—
Italy . . . . .	33	33	236	767	827	1,283	3,818	6,188	—	—
Switzerland . . . . .	2	2	983	2,604	7	20	8,151	23,358	—	—
Czechoslovakia . . . . .	0	37	46	154	26	661	2,703	4,107	—	—
Canada . . . . .	79	284	37	2	3,505	10,681	238	2,822	—	—
United States . . . . .	139	130	101	205	1,607	2,008	1,014	1,881	—	—
Ceylon . . . . .	—	—	75	55	—	—	602	642	—	—
Java and Madura . . . . .	—	—	—	—	—	—	1) 8,246	1) 7,862	—	—
Japan . . . . .	—	—	46	26	—	—	163	231	—	—
Algeria . . . . .	2	7	410	154	35	73	3,962	4,389	—	—
Egypt . . . . .	—	—	—	—	1) 364	1) 44	1) 765	1) 1,918	—	—
Tunis . . . . .	2	0	165	132	4	9	1,305	930	—	—
<b>Totals . . . . .</b>	<b>117,803</b>	<b>118,808</b>	<b>118,518</b>	<b>119,424</b>	<b>1,227,218</b>	<b>1,305,374</b>	<b>1,221,671</b>	<b>1,280,475</b>	<b>—</b>	<b>—</b>
<b>Cheese. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	503	278	0	0	2,661	3,133	4	4	—	—
Denmark . . . . .	1,274	714	13	42	14,535	9,383	130	604	—	—
Finland . . . . .	340	353	7	11	7,225	5,776	26	33	—	—
Italy . . . . .	5,833	6,962	703	509	66,399	88,948	8,805	10,115	—	—
Lithuania . . . . .	106	205	2	0	1,768	2,546	7	11	—	—
Norway . . . . .	212	238	24	49	3,644	2,840	240	562	—	—
Netherlands . . . . .	11,255	12,278	97	130	170,061	190,460	1,076	1,345	—	—
Poland . . . . .	29	108	46	46	767	2,884	586	761	—	—
Switzerland . . . . .	3,294	2,321	392	1,149	43,700	54,307	4,751	8,470	—	—
Czechoslovakia . . . . .	375	1,310	194	247	6,124	10,981	3,071	3,779	—	—
Yugoslavia . . . . .	97	234	11	15	2,617	4,198	150	243	—	—
Canada . . . . .	4,414	3,896	75	159	86,940	84,790	1,166	1,446	—	—
Australia . . . . .	1,865	1,587	13	2	8,801	7,405	60	24	—	—
New Zealand . . . . .	3,210	21,753	0	0	163,980	181,703	2	4	—	—
<i>Importing Countries:</i>										
Germany . . . . .	573	573	7,293	8,353	4,237	7,359	108,688	120,404	—	—
Austria . . . . .	366	377	278	359	3,982	6,232	3,732	5,781	—	—
Belgium . . . . .	33	57	3,699	3,417	553	814	45,660	49,600	—	—
Spain . . . . .	13	7	302	441	238	236	2,480	3,867	—	—
Irish Free State . . . . .	0	40	132	269	37	194	2,019	2,687	—	—
France . . . . .	3,001	3,975	4,795	5,697	29,211	34,289	52,267	82,810	—	—
Gr. Brit. and N. Irel . . . . .	690	686	31,288	28,643	7,242	7,346	336,733	323,091	—	—
Greece . . . . .	121	24	137	522	620	190	1,753	3,960	—	—
Hungary . . . . .	0	7	0	9	33	110	11	203	—	—
Portugal . . . . .	—	—	108	141	—	—	608	842	—	—
Sweden . . . . .	—	—	110	179	—	—	1,045	1,691	—	—
United States . . . . .	174	212	4,846	5,194	1,534	1,863	55,032	61,992	—	—
India . . . . .	0	0	86	106	2	4	939	886	—	—
Java and Madura . . . . .	—	—	—	—	—	—	1) 1,495	1) 1,497	—	—
Syria and Lebanon . . . . .	0	0	152	46	68	86	1,195	708	—	—
Algeria . . . . .	15	15	1,173	736	159	172	11,100	11,182	—	—
Egypt . . . . .	—	—	—	—	1) 231	1) 57	1) 4,769	1) 4,614	—	—
Tunis . . . . .	0	0	240	317	13	24	2,191	2,033	—	—
<b>Totals . . . . .</b>	<b>37,793</b>	<b>58,210</b>	<b>56,216</b>	<b>56,788</b>	<b>627,322</b>	<b>708,330</b>	<b>652,391</b>	<b>705,249</b>	<b>—</b>	<b>—</b>

1) 3) See notes page 131.

COUNTRIES	DECEMBER				FIVE MONTHS (August 1-December 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1932	1931	1932	1931	1932	1931	1932	1931	1931-32	1931-32
<b>Cotton. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
United States . . .	5,609	6,318	53	24	22,944	21,619	190	132	46,787	620
Argentina . . .	9	9	—	—	282	251	—	—	584	—
Brazil . . .	—	—	—	—	2	161	—	—	183	—
India . . .	659	765	29	68	2,615	3,280	170	309	7,088	2,249
Egypt . . .	—	—	—	—	1,821	2,487	0	0	7,500	0
<i>Importing Countries</i>										
Germany . . .	126	163	842	1,138	631	787	3,655	3,228	1,640	8,327
Austria . . .	0	0	33	79	0	0	170	245	0	551
Belgium . . .	26	26	174	181	108	165	783	683	348	1,349
Denmark . . .	—	—	13	18	—	—	49	53	—	134
Spain . . .	2	2	198	130	9	7	917	635	24	2,317
Estonia . . .	0	0	7	7	0	0	24	29	0	75
Finland . . .	0	0	18	18	0	0	79	73	0	159
France . . .	24	40	578	397	137	265	2,725	1,265	494	4,264
Gr. Brit. and N. Irel.	51	51	1,512	2,006	207	163	5,415	5,344	485	12,452
Greece . . .	0	0	22	22	0	0	62	93	0	192
Hungary . . .	0	0	35	46	0	0	165	137	0	333
Italy . . .	0	0	434	388	0	0	1,521	1,365	0	4,037
Latvia . . .	0	0	9	7	0	0	29	33	0	51
Norway . . .	0	0	2	7	0	0	24	18	0	44
Netherlands . . .	0	0	101	99	2	4	313	417	7	860
Poland . . .	2	2	104	90	11	11	538	485	22	1,074
Portugal . . .	—	—	64	44	—	—	194	157	—	434
Sweden . . .	—	—	66	66	—	—	243	265	—	564
Switzerland . . .	0	0	64	75	0	4	247	223	4	505
Czechoslovakia . . .	7	13	265	267	53	64	847	939	137	2,002
Yugoslavia . . .	0	0	18	22	0	0	71	86	0	201
Canada . . .	—	—	139	123	—	—	478	456	—	974
Japan . . .	0	42	1,329	1,698	152	340	4,619	4,251	1,041	16,484
Algeria . . .	0	0	0	0	0	0	2	2	4	7
<b>Totals</b>	<b>6,515</b>	<b>7,431</b>	<b>6,102</b>	<b>7,020</b>	<b>28,974</b>	<b>29,608</b>	<b>23,530</b>	<b>20,923</b>	<b>66,348</b>	<b>60,259</b>

**Wool. — (Thousand lb.).**

EXPORTING COUNTRIES					FOUR MONTHS (September 1-December 31)				TWELVE MONTHS (Sept 1-August 31)	
Irish Free State	906	1,135	97	112	5,102	5,113	328	328	9,949	948
Hungary	240	20	134	117	1,089	1,118	445	556	2,344	1,270
Argentina	(a) 33,444	28,984	—	—	88,445	62,693	—	—	249,304	—
	(b) 1,362	653	—	—	4,773	3,003	—	—	8,098	—
Chile	—	—	—	—	653	434	—	—	24,441	—
India	3,117	6,089	666	291	15,549	15,457	2,366	1,338	35,402	5,020
Syria and Lebanon	190	207	46	37	1,466	1,854	875	366	3,935	985
Algeria	692	450	108	55	2,538	2,392	672	459	6,856	1,252
Egypt	—	—	—	—	1,089	549	1	0	1,413	4
Union of S. Africa	(a) —	—	—	—	(b) 99,422	(a) 41,496	(b) 1	(a) 0	298,044	0
	(b) 114,795	114,760	106	33	(a) 1,250	(b) 871	(a) 223	(b) 485	5,296	1,261
Australia	(a) 6,336	5,293	0	0	404,232	375,731	198	71	762,756	2,004
	(b) 17,381	9,764	0	0	25,792	23,900	0	0	58,535	15
New Zealand	(a) 4,286	3,572	0	0	(b) 25,005	(a) 13,173	(b) 9	(a) 2	177,836	2
	(b) —	—	—	—	17,855	11,034	9	13	43,314	13
Importing Countries										
Germany	(a) 357	2,240	34,727	15,296	1,345	6,654	78,961	37,900	9,780	241,740
	(b) 591	966	3,336	2,831	2,954	4,550	12,033	9,936	9,681	31,656
Austria	11	11	2,205	1,252	29	40	5,911	3,186	82	11,658
Belgium	(a) 10,428	326	24,432	10,655	23,164	4,486	53,339	26,416	18,715	116,938
	(b) 1,523	1,728	333	168	6,530	8,278	1,457	1,188	22,465	3,036
Denmark	2	26	331	584	71	57	1,933	1,717	157	4,409
Spain	172	377	531	306	946	1,023	4,954	935	2,566	10,483
Finland	2	66	254	130	29	71	1,365	739	86	2,762
France	3,001	4,548	48,780	34,987	11,843	20,137	131,716	77,755	45,631	393,116
Gr. Brit. and N. Irel.	36,972	23,016	98,629	95,846	114,896	69,730	237,531	204,678	315,628	888,010
Greece	26	2	190	313	269	57	688	853	300	2,094
Italy	(a) 22	282	7,824	7,657	104	597	23,243	23,232	1,232	145,076
	(b) 311	110	1,191	1,834	1,437	794	5,379	5,948	1,620	14,290
Norway	97	106	130	194	282	293	710	778	756	2,355
Netherlands	(a) 148	205	814	516	924	811	2,366	1,731	1,933	7,229
	(b) 40	20	679	558	346	163	3,034	2,427	739	8,148
Poland	137	174	3,926	2,789	520	930	9,994	6,479	1,687	27,084
Sweden	—	—	1,259	1,587	—	—	5,366	5,115	—	17,745
Switzerland	55	35	3,153	2,174	128	284	7,399	5,093	397	20,150
Czechoslovakia	201	278	3,534	3,878	573	1,133	11,621	11,936	1,892	32,038
Yugoslavia	29	22	340	82	115	71	939	822	152	2,937
Canada	381	370	1,034	430	1,852	3,298	2,703	1,559	5,159	6,277
United States	53	90	4,978	10,536	331	362	16,458	42,653	3,893	82,777
Japan	0	20	24,723	25,575	15	33	58,057	41,462	77	192,901
Tunis	7	2	62	26	26	42	258	212	172	465
Totals	237,324	205,947	268,552	221,031	862,989	682,712	682,535	518,368	2,132,323	2,278,152

a) = Wool, greasy; b) = Wool, scoured. — i) See notes page 131.

COUNTRIES	DECEMBER		SIX MONTHS (July 1-Dec. 31)		TWELVE MONTHS (July 1- June 30)	COUNTRIES	DECEMBER		SIX MONTHS (July 1-Dec. 31)		TWELVE MONTHS (July 1- June 30)
	1932	1931	1932	1931	1931-32		1932	1931	1932	1931	1931-32
<b>Coffee. — (Thousand lb.).</b>						<b>Tea. — (Thousand lb.).</b>					
<b>EXPORTS.</b>						<b>EXPORTS.</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	530,566	1) 896,447	2,022,263	Ceylon . . . . .	19,731	21,727	115,199	107,826	245,982
India . . . . .	452	112	3,840	2,866	17,926	India . . . . .	39,384	46,870	277,953	259,013	342,946
Java and Madura .	4,839	4,442	67,429	27,529	51,725	Java and Madura .	15,640	14,242	76,551	79,188	163,312
						Japan . . . . .	...	...	1) 17,624	1) 12,769	24,590
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	141	159	880	1,213	1,649	Belgium . . . . .	0	2	7	13	22
France . . . . .	29	1,140	295	6,012	9,643	Irish Free State .	4	29	15	126	258
Belgium . . . . .	51	0	55	7	15	France . . . . .	0	2	7	22	35
Netherlands . . . .	2,811	988	10,066	5,946	15,265	Gr. Brit. and N. Irel.	9,200	6,956	45,526	47,351	77,887
Portugal . . . . .	483	121	1,076	505	1,270	Netherlands . . . .	9	11	57	71	139
Switzerland . . . . .	29	31	201	333	613	United States . . .	15	60	139	214	474
Canada . . . . .	2	2	24	24	42	Syria and Lebanon .	0	0	0	4	20
United States . . . .	941	1,424	6,984	7,685	22,593	Algeria . . . . .	4	2	20	29	49
Ceylon . . . . .	0	2	2	7	4	Union of S. Africa .	...	...	1) 7	1) 20	121
Syria and Lebanon .	0	0	7	4	46	Australia . . . . .	42	29	348	344	549
Australia . . . . .	7	2	18	33	55	New Zealand . . . .	...	...	1) 33	1) 31	148
<b>Totals . . . . .</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>2,143,116</b>	<b>Totals . . . . .</b>	<b>84,029</b>	<b>89,930</b>	<b>533,486</b>	<b>507,021</b>	<b>856,532</b>
<b>IMPORTS.</b>						<b>IMPORTS.</b>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	28,755	29,793	139,088	159,443	307,608	Germany . . . . .	1,034	990	5,351	5,269	10,494
Austria . . . . .	1,155	2,198	7,846	8,710	17,531	Austria . . . . .	99	123	538	622	1,131
Belgium . . . . .	15,428	10,558	62,858	64,221	114,762	Belgium . . . . .	57	40	291	291	661
Bulgaria . . . . .	123	154	317	635	1,658	Denmark . . . . .	101	99	595	631	1,380
Denmark . . . . .	4,244	5,763	20,047	31,864	66,439	Spain . . . . .	29	26	141	146	322
Spain . . . . .	3,871	5,143	21,936	23,656	53,903	Estonia . . . . .	9	13	42	68	172
Estonia . . . . .	11	24	46	126	298	Irish Free State . .	1,631	2,068	11,671	13,647	25,122
Irish Free State . . .	26	22	179	205	522	Finland . . . . .	4	13	77	161	249
Finland . . . . .	2,533	2,105	16,433	19,008	32,481	France . . . . .	273	333	1,499	1,631	3,419
France . . . . .	35,935	31,815	202,400	217,848	427,557	Gr. Britain and N.	58,090	66,540	343,345	326,409	550,364
Gr. Britain and N.	2,524	2,712	18,067	18,186	37,516	Ireland . . . . .	24	62	223	377	699
Ireland . . . . .	600	1,768	4,297	7,899	13,010	Greece . . . . .	75	66	346	397	562
Greece . . . . .	439	551	2,943	3,292	6,041	Hungary . . . . .	44	44	130	170	333
Hungary . . . . .	7,438	8,001	42,832	46,319	93,366	Latvia . . . . .	2	13	60	79	128
Latvia . . . . .	24	44	117	212	375	Lithuania . . . . .	4	0	49	71	119
Lithuania . . . . .	57	33	196	203	445	Norway . . . . .	33	37	194	203	386
Norway . . . . .	2,460	3,640	16,632	20,309	38,189	Netherlands . . . .	1,506	2,390	20,316	14,980	30,836
Netherlands . . . . .	7,507	8,973	54,183	54,772	103,379	Poland . . . . .	306	425	1,836	2,187	4,317
Poland . . . . .	1,504	2,026	7,485	9,290	17,185	Portugal . . . . .	71	60	216	335	648
Portugal . . . . .	1,620	1,717	5,426	5,915	10,657	Sweden . . . . .	68	86	408	467	858
Sweden . . . . .	6,285	11,217	43,954	66,902	107,586	Switzerland . . . . .	461	150	1,464	908	1,792
Switzerland . . . . .	8,585	3,472	26,165	16,290	34,286	Czechoslovakia . . .	388	101	1,153	1,199	1,737
Czechoslovakia . . .	4,905	1,753	17,339	17,229	32,386	Yugoslavia . . . . .	42	55	276	441	622
Yugoslavia . . . . .	1,058	1,305	7,020	9,156	17,434	Canada . . . . .	3,086	3,014	15,626	14,240	39,031
Canada . . . . .	3,320	3,014	13,384	14,083	31,963	United States . . . .	9,817	7,747	53,224	48,956	90,460
United States . . . .	124,769	158,835	641,411	768,869	1,628,986	Chile . . . . .	...	...	1) 1,561	1) 2,612	5,172
Chile . . . . .	...	...	3,206	4,550	9,308	Syria and Lebanon .	37	123	104	337	586
Ceylon . . . . .	205	377	1,360	2,643	3,572	Turkey . . . . .	37	163	1,107	948	1,504
Japan . . . . .	395	485	1,909	2,557	6,724	Algeria . . . . .	346	223	1,997	1,349	10,421
Syria and Lebanon .	159	298	1,107	1,246	2,324	Egypt . . . . .	...	...	1) 8,796	1) 6,587	13,999
Turkey . . . . .	1,402	875	6,047	5,238	8,841	Tunis . . . . .	216	251	1,345	5,280	6,669
Algeria . . . . .	2,286	2,535	14,950	14,511	30,532	Union of S. Africa .	...	...	1) 4,619	1) 6,444	12,683
Egypt . . . . .	...	...	6,559	6,204	15,862	Australia . . . . .	4,083	4,418	27,163	23,153	44,899
Tunis . . . . .	280	322	1,614	1,707	3,190	New Zealand . . . .	...	...	1) 4,676	1) 4,835	2,522
Un. of S. Africa . . .	...	...	12,154	13,794	26,026						
Australia . . . . .	218	150	1,186	1,592	3,510						
New Zealand . . . . .	...	...	139	209	452						
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
India . . . . .	0	0	110	60	106	India . . . . .	714	549	3,856	4,676	6,486
						Java and Madura . .	...	...	1) 2,952	1) 5,267	9,771
<b>Totals . . . . .</b>	<b>276,121</b>	<b>301,678</b>	<b>1,422,942</b>	<b>1,638,953</b>	<b>3,306,010</b>	<b>Totals . . . . .</b>	<b>82,687</b>	<b>90,222</b>	<b>517,241</b>	<b>495,373</b>	<b>880,554</b>

1) See notes page 131.

COUNTRIES	DECEMBER		THREE MONTHS (Oct. 1-Dec. 31)		TWELVE MONTHS (Oct. 1-Sept. 30)	COUNTRIES	DECEMBER		FIVE MONTHS (August 1-Dec. 31)		TWELVE MONTHS (August 1-July 31)
	1932	1931	1932	1931	1931-32		1932	1931	1932	1931	1931-32
<b>Cacao. — (Thousand lb.).</b>						<b>Total Wheat and Flour *)</b> (Thousand centals).					
<b>EXPORTS</b>						<b>a) NET EXPORTS.</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Grenada . . . . .	...	...	2) 304	2) 179	9,658	Germany . . . . .	4) 276	4) 392	1,074	4) 3 366	4) 6,691
Dominican Republ. . . . .	...	...	1) 2,187	1) 1,949	35,935	Bulgaria . . . . .	0	7	2	4) 6)	4)
Brazil . . . . .	...	...	1) 63,233	1) 35,980	197,978	Spain . . . . .	247	1,358	2,220	8,051	10,752
Ecuador . . . . .	...	...	1) 1,323	1) 1,984	34,974	Hungary . . . . .	2	7	11	20	55
Trinidad . . . . .	...	...	1) 2,908	1) 3,986	39,617	Lithuania . . . . .	4) 4)	4) 4)	37 1)	18,832	22,335
Venezuela . . . . .	...	...	...	...	36,019	Poland . . . . .	6) 1,453	6) 2,493	6) 8,477	6) 37,424	6) 37,909
Ceylon . . . . .	1,166	1,528	2,844	2,851	9,266	Rumania . . . . .	128	714	476	6,360	8,935
Java and Madura . . . . .	278	309	875	853	3,366	U. S. S. R. . . . .	17,924	14,577	90,247	63,621	123,625
Cameroon . . . . .	6,294	5,659	12,207	9,123	27,315	Yugoslavia . . . . .	2,028	6,592	12,527	34,416	65,566
Ivory Coast . . . . .	...	...	2) 864	2) 238	54,578	Canada . . . . .	4,321	4,971	13,056	19,850	83,525
Gold Coast . . . . .	86,862	80,396	183,317	135,172	462,878	United States . . . . .	...	...	4) 1)	9	46
Nigeria . . . . .	...	...	1) 29,026	1) 11,208	123,929	Argentina . . . . .	62	123	289	505	1,118
St. Thomas and Prince Is. . . . .	1,947	3,172	5,796	9,449	27,626	Chile . . . . .	37	26	4)	306	4)
Togoland . . . . .	2,597	2,520	3,527	3,697	13,916	Syria and Lebanon . . . . .	13	64	49	258	922
<i>Importing Countries:</i>						Turkey . . . . .	503	110	3,212	688	3,508
Germany . . . . .	20	238	20	238	496	Algeria . . . . .	260	84	2,053	1,404	5,104
Belgium . . . . .	82	95	379	229	1,508	Tunis . . . . .	7,372	5,542	23,067	24,901	92,453
France . . . . .	0	2	60	2	4	<b>Totals . . . . .</b>					
Netherlands . . . . .	366	694	906	3,422	6,740	34,626	37,060	157,992	220,403	464,473	
United States . . . . .	2,024	392	3,164	1,969	7,011						
Australia . . . . .	2	20	2	108	143						
<b>Totals . . . . .</b>	—	—	—	—	1,092,957						
<b>IMPORTS</b>						<b>b) NET IMPORTS.</b>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	17,659	18,495	46,022	49,758	175,744	Germany . . . . .	467	637	5)	1,005	13,913
Austria . . . . .	836	1,506	1,825	4,026	13,651	Austria . . . . .	736	1,113	2,721	3,699	8,113
Belgium . . . . .	2,039	1,956	4,623	4,524	21,588	Belgium . . . . .	2,709	2,520	10,113	12,461	27,862
Bulgaria . . . . .	49	77	90	179	1,323	Denmark . . . . .	626	1,043	3,598	6,274	10,412
Denmark . . . . .	699	463	1,237	970	7,756	Spain . . . . .	5)	5)	5)	18	6,457
Spain . . . . .	2,743	2,718	4,570	4,147	21,892	Estonia . . . . .	0	18	0	139	262
Estonia . . . . .	46	49	66	126	452	Irish Free State . . . . .	1,019	955	4,564	5,262	11,715
Irish Free State . . . . .	287	75	443	313	1,149	Finland . . . . .	251	141	1,243	1,484	2,555
Finland . . . . .	9	0	40	79	181	France . . . . .	1,332	1,847	11,890	16,462	47,137
France . . . . .	7,445	6,967	27,774	22,267	91,214	Gr. Brit. and N. Irel. . . . .	9,231	9,301	51,308	72,638	143,918
Gr. Brit. and N. Irel. . . . .	14,385	8,836	40,272	28,768	138,407	Greece . . . . .	1,014	1,080	5,057	5,957	14,204
Greece . . . . .	302	243	831	866	2,844	Italy . . . . .	805	359	1,678	2,092	19,930
Hungary . . . . .	346	785	1,016	2,302	5,573	Latvia . . . . .	0	31	13	245	575
Italy . . . . .	1,351	1,623	4,231	4,290	15,053	Norway . . . . .	591	556	2,046	2,507	5,090
Latvia . . . . .	170	218	276	403	1,607	Netherlands . . . . .	1,365	1,647	6,826	8,382	18,680
Lithuania . . . . .	86	35	146	110	615	Poland . . . . .	15	57	44	5)	5)
Norway . . . . .	562	459	895	1,526	5,033	Portugal . . . . .	42	71	412	580	1,660
Netherlands . . . . .	10,110	6,369	21,200	20,256	92,202	Swe. den . . . . .	128	390	1,285	1,605	4,096
Poland . . . . .	1,426	922	3,572	3,016	11,444	Switzerland . . . . .	6) 849	6) 1,358	6) 5,331	6) 6,326	6) 12,666
Portugal . . . . .	134	130	295	324	855	Czechoslovakia . . . . .	141	1,080	708	7,284	14,758
Sweden . . . . .	959	1,164	1,936	3,177	10,481	Chile . . . . .	...	...	1) 227	5)	5)
Switzerland . . . . .	944	362	2,344	1,587	11,197	Ceylon . . . . .	68	71	269	258	542
Czechoslovakia . . . . .	2,441	1,323	5,370	3,635	21,526	Indo-China . . . . .	...	...	1) 159	1)	187
Yugoslavia . . . . .	95	86	265	355	1,501	Japan . . . . .	315	884	666	3,232	12,584
Canada . . . . .	1,583	615	4,749	3,225	16,444	Java and Madura . . . . .	...	...	1) 430	1)	573
United States . . . . .	44,516	36,608	132,710	73,436	420,143	Syria and Lebanon . . . . .	5)	5)	13	5)	223
Australia . . . . .	60	384	434	11,252	1,252	Egypt . . . . .	...	...	1) 154	1)	1,676
New Zealand . . . . .	...	...	1) 227	1) 335	1,554	Union of S. Africa . . . . .	...	...	1) 130	1)	507
<b>Totals . . . . .</b>	111,282	92,468	307,459	236,407	1,102,683	New Zealand . . . . .	...	...	1) 527	1)	110
						<b>Totals . . . . .</b>	21,704	25,759	111,413	161,165	385,236

\*) Flour reduced to grain on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 30 November. — 2) Data up to 31 October. — 3) Data up to 30 September — 4) See Net Imports. — 5) See Net Exports. — 6) Wheat only.



## STOCKS

## STOCKS (TOTAL AND QUANTITIES FOR SALE) IN FARMERS' HANDS IN GERMANY.

PRODUCTS	% Total stocks : total production				% Quantities intended for sale : total production				% Stocks in elevators : total production 1)	
	15 Jan. 1933	15 Dec. 1932	15 Jan. 1932	15 Jan. 1931	15 Jan. 1933	15 Dec. 1932	15 Jan. 1932	15 Jan. 1931	15 Jan. 1933	15 Dec. 1932
Winter wheat . . .	43.7	52.5	31.4	33.5	37.3	42.1	24.4	26.2	7.4	7.2
Spring wheat . . .	66.0	72.7	58.4	61.1	54.7	61.2	47.8	47.1	5.6	7.4
Winter rye . . .	43.5	51.1	33.7	44.2	23.8	28.8	13.8	22.9	3.9	3.6
Winter barley . . .	21.0	26.4	20.4	21.6	3.2	3.8	3.2	2.4	0.1	0.2
Spring barley . . .	41.9	49.7	44.7	36.3	21.4	27.4	25.6	17.7	0.5	0.7
Oats . . .	62.2	70.7	60.0	64.0	14.3	16.9	13.9	17.0	0.5	0.6
Potatoes . . .	49.9	58.0	47.6	49.1	15.7	17.9	14.4	14.5	—	0.2

1) These stocks are the property of farmers but are not on the farms; as they are partly in commercial elevators certain quantities are reckoned twice, the report on stocks in elevators not making any distinction of ownership.

Authority: Preisberichtsstelle beim Deutschen Landwirtschaftsrat.

## STOCKS OF CEREALS IN COMMERCIAL ELEVATORS AND MILLS IN GERMANY 1).

PRODUCTS	Last day of month			Last day of month		
	January 1933	December 1932	November 1932	January 1933	December 1932	November 1932
	1,000 centals			1,000 bushels or barrels		
WHEAT:						
Grain . . . . .	15,102	15,527	14,398	25,169	25,878	23,997
Flour for bread . . . . .	3,086	3,078	2,701	1,575	1,570	1,378
TOTAL 2) . . . . .	19,218	19,630	17,998	32,029	32,716	29,999
RYE:						
Grain . . . . .	13,239	12,921	11,429	23,641	23,074	20,409
Flour for bread . . . . .	1,570	1,795	1,631	801	916	832
TOTAL 2) . . . . .	15,331	15,313	13,605	27,379	27,349	24,292
BARLEY . . . . .	3,618	4,237	4,059	7,537	8,828	8,456
OATS . . . . .	2,191	2,253	1,918	6,848	7,041	5,944

1) See note under the corresponding table in the Bulletin for March, 1932 on page 218. — 2) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain (1,000 barrels of flour = 4,355.55 bushels of wheat or 4,584.80 bushels of rye).

## QUANTITIES OF CEREALS ON OCEAN PASSAGE WITH FIRST DESTINATION FOR EUROPE.

PRODUCTS	Saturday nearest to 1st of month					Saturday nearest to 1st of month				
	Feb. 1933	Jan. 1933	Dec. 1932	Feb. 1932	Feb. 1931	Feb. 1933	Jan. 1933	Dec. 1932	Feb. 1932	Feb. 1931
	1,000 centals					1,000 bushels				
Wheat (and flour in terms of wheat) . . . . .	29,347	21,850	23,765	30,413	22,363	48,912	36,416	39,608	50,688	37,272
Rye . . . . .	115	19	384	1,219	523	206	34	686	2,177	934
Barley . . . . .	2,012	1,224	1,632	3,084	4,000	4,192	2,550	3,400	6,425	8,333
Oats . . . . .	1,632	710	1,264	2,435	1,715	5,100	2,220	3,950	7,610	5,360
Maize . . . . .	11,150	12,662	16,234	14,501	16,622	19,911	22,611	28,989	25,894	29,683

Authority: Broomhall's Corn Trade News.

## WHEAT AND WHEAT-FLOUR STOCKS HELD BY COMMERCIAL MILLS IN THE UNITED STATES (1).

Specification and situation	Last day of month					Last day of month				
	Dec 1932	Sept. 1932	June 1932	Dec 1931	Dec 1930	Dec 1932	Sept 1932	June 1932	Dec 1931	Dec 1930
	1,000 centals					1,000 bushels or barrels				
Wheat held by mills and mill elevators attached to mills . . . . .	62,119	65,613	36,196	54,571	53,687	103,531	109,355	60,326	90,952	89,478
Wheat in transit to merchant mills and bought to arrive . . . . .	7,250	8,879	5,659	1,085	7,274	12,083	14,798	9,432	1,808	12,123
Wheat flour in mills and warehouses, and in transit, sold and unsold . . . .	7,864	8,320	6,254	8,085	7,872	18,856	4,245	3,191	4,126	4,016
TOTAL (2) . . . . .	80,683	86,463	50,854	67,291	72,286	134,470	144,104	84,756	112,152	170,477

(1) Partial census including mills accounting for over 90 % of the total capacity of all commercial mills, see article about cereal stocks on page 502 of Crop Report for August 1931. — (2) Including flour in terms of wheat

## COMMERCIAL CEREALS IN STORE IN CANADA AND THE UNITED STATES.

SPECIFICATION	Friday or Saturday nearest to 1st of month					Friday or Saturday nearest to 1st of month				
	Feb 1933	Jan 1933	Dec. 1932	Feb 1932	Feb 1931	Feb 1933	Jan 1933	Dec. 1932	Feb 1932	Feb 1931
	1,000 centals					1,000 bushels				
<b>WHEAT</b>										
Canadian in Canada . . . . .	137,512	141,910	142,316	104,156	105,445	229,187	236,516	237,194	173,593	175,741
U S in Canada . . . . .	4,076	4,163	4,200	17,191	2,881	6,703	6,938	7,000	28,652	4,802
U S in the United States . . . .	94,819	101,182	105,869	130,631	121,616	158,031	168,636	176,448	217,719	202,694
Canad. in the United States . . .	6,685	8,144	9,118	13,143	16,274	11,142	13,574	15,196	21,905	27,124
Total . . . . .	243,092	255,399	261,503	265,121	246,216	405,153	425,664	435,838	441,889	410,361
<b>RYE</b>										
Canadian in Canada . . . . .	2,811	2,792	2,671	6,250	7,364	5,020	4,985	4,770	11,161	13,150
U S in Canada . . . . .	55	55	55	478	1,214	99	99	99	853	2,167
U S in the United States . . . .	4,443	4,476	4,496	5,648	8,752	7,934	7,992	8,029	10,085	15,629
Canad. in the United States . . .	305	307	231	954	250	545	548	412	1,703	446
Total . . . . .	7,614	7,630	7,453	13,330	17,580	13,598	13,624	13,310	23,802	31,392
<b>BARLEY</b>										
Canadian in Canada . . . . .	3,267	3,190	2,892	4,741	13,998	6,806	6,645	6,024	9,878	29,163
U S in Canada . . . . .	10	10	10	12	148	21	21	21	25	309
U S in the United States . . . .	5,048	4,918	4,734	2,741	6,845	10,516	10,245	9,862	5,710	14,261
Canad. in the United States . . .	0	0	0	762	612	0	0	0	1,587	1,274
Total . . . . .	8,325	8,118	7,636	8,256	21,603	17,343	16,911	15,907	17,200	45,007
<b>OATS: (1)</b>										
Canadian in Canada . . . . .	3,177	3,172	3,099	4,972	4,828	9,929	9,911	9,685	15,538	15,087
U S in Canada . . . . .	253	372	374	4	378	790	1,162	1,170	12	1,180
U S in the United States . . . .	8,357	8,470	8,795	5,471	8,566	26,116	26,468	27,484	17,096	26,770
Canad. in the United States . . .	0	0	0	1	53	0	0	0	2	167
Total . . . . .	11,787	12,014	12,268	10,448	13,825	36,835	37,541	38,339	32,648	43,204
<b>MAIZE</b>										
U S in Canada . . . . .	1,743	2,129	2,358	410	247	3,113	3,801	4,211	732	441
Of other origin in Canada . . .	1,048	998	942	1,122	573	1,872	1,782	1,682	2,003	1,023
U S in the United States . . . .	18,843	17,172	15,193	7,939	9,784	33,648	30,665	27,130	14,176	17,383
Total . . . . .	21,634	20,299	18,493	9,471	10,554	38,633	36,248	33,023	16,911	18,847

1) For oats the bushel is of 32 lbs.

## GRAIN AND FLOUR STOCKS AT THE PORTS OF GREAT BRITAIN AND IRELAND 1).

PRODUCTS	First of the month					First of the month				
	Feb 1933	Jan 1933	Dec. 1932	Feb 1932	Feb 1931	Feb 1933	Jan 1933	Dec. 1932	Feb 1932	Feb 1931
	1,000 centals					1,000 bushels				
WHEAT										
Grain	3,576	3 840	4,080	9,792	9,504	5,960	6,400	6,800	16,320	15,840
Flour as grain	600	672	480	864	912	1 000	1,120	800	1,440	1,520
TOTAL	4,176	4,512	4,560	10,656	10 416	6,960	7,520	7,600	17,760	17,360
Barley	540	660	680	800	1 847	1 125	1,375	1,417	1,667	3 833
Oat-	320	432	304	448	1 312	1,000	1 350	950	1 400	4 100
Maize	2,832	2 976	2,544	6,048	2 856	5 057	5,314	4,543	10,800	5 100

1) Imported cereals  
Authority Broomhall's Corn Trade News

STOCKS OF POTATOES IN FARMERS' HANDS IN THE NETHERLANDS  
(partial data) (1)

DATE OF ESTIMATE	Stocks production		Production in absolute figures				% Production of communes considered total production of the country (2)
	Clay soils	Sand and fen soils	Clay soils	Sand and fen soils	Clay soils	Sand and fen soils	
			1 000 centals		1 000 bushels		
15 January 1930	42	26	9 573	4 903	15 954	8 172	58
15 April 1930	16	6	3 624	1 836	6 041	3 061	
15 January 1931	27	16	4 561	4 226	7 602	7 044	
15 April 1931	8	5	1 314	1 243	2 190	2 072	
15 January 1932	28	19	4 978	4 260	8 297	7 100	67
15 April 1932	13	8	2 272	1 794	3 786	2 989	
15 January 1933	50	31	13 081	8 148	21 800	13 580	

1) Estimate for the communes in which production is considered to exceed consumption — 2) Production of the year preceding that indicated

## STOCKS OF COTTON ON HAND IN THE UNITED STATES

LOCATION	Last day of the month					Last day of the month				
	Jan 1933	Dec 1932	Nov 1932	Jan 1932	Jan 1931	Jan 1933	Dec 1932	Nov 1932	Jan 1932	Jan 1931
	1,000 centals					1 000 bales (counting round as half bales)				
In consuming establishments	7,349	7,522	7,162	8 047	7,831	1 495	1,530	1,457	1 637	1,618
In public storage and at compresses	49,298	50,917	52,526	49,356	38,453	10,021	10,350	10 677	10,032	7,939
TOTAL	56,647	58 439	59,688	57 403	46,284	11,516	11,880	12 134	11,669	9 557

## STOCKS OF COTTON AT BOMBAY AND AT ALEXANDRIA

PORTS	Thursday nearest to 1st of month					Thursday nearest to 1st of month				
	Feb 1933	Jan 1933	Dec 1932	Feb 1932	Feb 1931	Feb 1933	Jan 1933	Dec 1932	Feb 1932	Feb 1931
	1 000 centals					1 000 bales (1 bale = 478 lbs)				
Bombay 1)	2,524	2,091	2 001	1,760	3,244	528	437	419	836	679
Alexandria	4,119	4,214	4 137	5,468	5,298	862	882	865	1,144	2,108

1) Stocks held by exporters, dealers and mills  
Authorities East Indian Cotton Ass and Commission de la Bourse de Marseilles-Basol

## STOCKS OF COTTON IN EUROPE.

COUNTRIES, PORTS, DESCRIPTIONS	Thursday or Friday nearest to 1st of month					Thursday or Friday nearest to 1st of month				
	Feb 1933	Jan 1933	Dec 1932	Feb 1932	Feb 1931	Feb 1933	Jan 1933	Dec 1932	Feb 1932	Feb 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs)				
<i>Great Britain</i>										
American	2,423	2,361	2,087	2,111	2,879	507	494	437	442	602
Argentine, Brazil										
ian, etc	138	162	181	98	188	29	34	38	21	39
Peruvian, etc	267	294	321	226	397	56	61	67	47	83
East Indian, etc	292	334	212	575	322	61	70	44	120	68
Egyptian, Sudan										
etc	1,298	1,281	1,325	1,392	1,448	272	268	277	291	303
Other 1)	93	77	90	140	228	19	16	19	29	48
TOTAL	4,511	4,509	4,216	4,542	5,462	944	943	882	950	1,143
<i>Bremen</i>										
American	2,252	2,388	2,240	1,601	2,712	471	500	469	335	568
Other	122	54	65	23	73	25	11	13	5	15
TOTAL	2,373	2,442	2,305	1,624	2,785	496	511	482	340	583
<i>Le Havre</i>										
American	1,382	1,214	1,104	752	1,627	289	234	231	157	340
Other	43	40	38	109	169	9	8	8	23	36
TOTAL	1,425	1,254	1,142	861	1,796	298	262	239	180	376
<i>Total Continent 2)</i>										
American	4,417	4,386	4,027	3,266	4,936	924	918	843	683	1,033
Argentine, Brazil										
ian, etc	20	18	29	39	148	4	4	6	8	31
E. Indian Austral										
ian etc	176	88	94	108	210	37	18	19	23	44
Egyptian	125	121	111	157	145	26	25	23	33	30
W. Indian, W. Af										
rican, I. Afri										
can etc	33	28	24	28	82	7	6	5	6	17
TOTAL	4,771	4,641	4,285	3,598	5,521	998	971	896	753	1,155

1) Includes W. Indian, etc., E. African etc. W. African, and Australian — 2) Includes Bremen, Havre and other Continental ports  
 Authority: *Liverpool Cotton Ass.*

## IMPORT DUTIES ON CEREALS AND FLOUR

CHANGES TO BE MADE IN THE DUTIES PUBLISHED ON PAGES 160 TO 163 OF THE CROP REPORT FOR FEBRUARY 1932  
 (SEE ALSO THE SAME HEADING IN THE CROP REPORTS FOR 1932 AND 1933)

COUNTRY	PRODUCT	Date when enforced	Original data per metric quintal	Data in Amer. cents per bushel or barrel
Germany	Wheat rye barley: duty on export of equivalent quantities of seedling quality of the respective cereals 1)	1 Feb. 1933	exempt	exempt
Austria	Oats	7 Jan. 1933	2)	2)
"	Rye flour	1 Jan. 1933	23.50 gold crowns	431.74
Spain	Maize	1 Jan. 1933	9.00 pesetas	n 44.11
"	Maize	11 Jan. 1933	8.50 "	n 41.66
"	Maize	11 Feb. 1933	9.00 "	n 44.11
Ireland	Wheat	1 Jan. 1933	130.00 fms	54.03
"	Maize	"	exempt	exempt
Czechoslovakia	Wheat flour and rye flour: supplementary duty	9 Jan. 1933	68.00 Kc	179.59
"	Wheat flour and rye flour: supplementary duty	9 Feb. 1933	74.00 Kc	195.54

1) On the export of cereals for seed a certificate valid for the import of the same cereal up to 31 July 1933 is delivered — 2) Import subject to special ministerial permit

## MONTHLY REVIEW OF PRICES

(All quotations are, unless otherwise, for spots)

PRODUCTS, MARKETS AND DESCRIPTION	17	10	3	27	AVERAGE 1)				
	Feb.	Feb.	Feb.	Jan.	Jan.	Feb.	Feb.	Commercial	
	1933	1933	1933	1933	1933	1933	1931	1931-32	1930-31
<b>WHEAT.</b>									
Budapest (a): Tisza region (78 kg. p. hl.; pengo p. quintal) . . . . .	15 52	15.42	14 70	14.92	*) 14.15	13.09	14.79	12.28	15.34
Braila: Good quality (lei p. quintal) 2) . . . . .	n. q.	n. q.	n. q.	n. q.	*) —	292	336	305	351
Winnipeg: No. 1 Manitoba (cents p. 60 lbs.) . . . . .	46 1/4	45 1/4	44 1/4	44 1/4	44 1/4	63 1/4	59 1/4	59 1/4	64 1/4
Chicago: No. 2 Hard Winter (cents p. 60 lbs.) . . . . .	n. 47 1/4	n. 47 1/4	47 1/4	48 1/4	48 1/4	59	78 1/4	54 1/4	78
Minneapolis: No. 1 Northern (cents p. 60 lbs.) . . . . .	48 1/4	47 1/4	46 1/4	47 1/4	48 1/4	73 1/4	75 1/4	66 1/4	77 1/4
New-York: No. 2 Hard Winter (cents p. 60 lbs.) . . . . .	57 1/4	56 1/4	55 1/4	56 1/4	56 1/4	71 1/4	n. q.	66 1/4	n. 91 1/4
Buenos Aires (b): Barilletta (80 kg. p. hectol.; pesos paper p. quintal) . . . . .	5.40	5.37 1/2	5.50	5.55	5.60	6.64	6.10	6.68	6.83
Karachi: Karachi white, 2 % barley, 1 1/4 % dirt (rupees p. 656 lbs.) . . . . .	31-7-0	31-6-0	30-0-0	30-12-0	10) 30-5-0	24-8-9	19-7-9	21-15-9	19-15-2
Berlin: Home-grown (Reichsmarks p. quintal) . . . . .	19 70	18 80	18 80	18 30	18 52	24.60	27.42	23.63	26.00
Hamburg, c. i. f. (Reichsmarks p. quintal):									
No. 4 Manitoba . . . . .	8 21	8.13	8.13	8.21	8.34	10.97	12.52	10 38	12.65
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 9.32	n. 13.00
Borusso 3) . . . . .	6.85	7.07	7.11	7.15	7.23	8.86	9.84	8.78	11.10
Antwerp (francs p. quintal):									
Home-grown . . . . .	78.00	79.00	78.00	77.00	77.25	74.50	75.00	83.10	95.50
No. 2 Hard Winter, Gulf 4) . . . . .	67.50	67.50	69.00	71.00	72.50	85.25	116.00	81.75	112.50
Paris: Home-grown, 75-77 kg. (francs p. quintal) . . . . .	106.75	109.75	108.00	108.00	104.10	171.60	176.75	167.10	175.00
London: Home-grown (shillings p. 504 lbs.) . . . . .	22/9	22/9	22/9	22/9	22 9	25 6	22/1	26 5	27/1
London and Liverpool, c. i. f., parcels, shipping current month (shilling p. 480 lbs) 5):									
South Russian (on sample) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	22.1	22/3	23/7
No. 3 Manitoba . . . . .	23/-	23/-	23/-	23/4 1/2	24/2	29.5	n. 24 5	25/9	25/4
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	11) 28 1/2	n. q.	25/3	26/4
White Pacific . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	24 7	26/5	26/7
Rosate (afloat) 6) . . . . .	20/3	20/9	21 4 1/2	21 7 1/2	22/2	26/-	20.11	23/8	23/5
Choice White Karachi . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.
Australian . . . . .	23/3	23/9	24/-	24/-	24/7	27 11	21.10	25/9	25/7
Milan (a). Home-grown, soft (lire p. quintal) . . . . .	107.00	n. q.	110.00	111.00	111.75	115.75	107.85	106.20	109.10
Genoa c. i. f. (shillings p. metric ton): La Plata 7) . . . . .	n. 1.59	n. 1.60	n. 1.67	n. 1.68	n. 1.70	n. q.	n. 96/4	n. 2.21	110/-
<b>RYE.</b>									
Budapest (a): Home-grown (pengo p. quintal) . . . . .	6.85	6.85	6.42	6.30	13) 6.14	13.62	10.82	12.24	10.79
Berlin: Home-grown (Reichsmarks p. quintal) . . . . .	15.60	15.40	13.40	15.00	15.17	19.75	15.79	19.00	17.18
Hamburg, c. i. f. (Reichsmarks p. quintal) . . . . .									
Russi in (72-73 kg. p. hl.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	8.53	n. q.	n. 9.50	n. q.
La Plata (74-75 kg. p. hl.) . . . . .	5.50	5.63	5.67	5.84	5.89	8.39	n. q.	8.36	n. 7.65
Minneapolis: No. 2 (cents p. 56 lbs.) . . . . .	32	31	31	32	32 1/2	45 1/4	36 1/4	42 1/4	42 1/4
Groningen (c): Home-grown (florins p. quintal) . . . . .	3.70	3.70	3.80	3.90	3.92	4.77	3.82	5.13	4.45
<b>BARLEY.</b>									
Braila: Average quality (lei p. quintal) 2) . . . . .	n. q.	n. q.	n. q.	190	14) —	279	214	263	232
Winnipeg: No. 4 Western (cents p. 48 lbs.) . . . . .	25 3/4	24 3/4	25	25 1/4	25 1/4	36 1/4	19 3/4	34 1/4	26 1/4
Chicago: Feeding (cents p. 48 lbs.) . . . . .	26	28	25	27	27	49 1/4	41	43 1/4	43 1/4
Minneapolis: Feeding, lower grades (cents per 48 lbs.) . . . . .	22	21	22	21	21	44 1/4	35 1/4	38 3/4	37 1/4
Berlin: Home-grown fodder (Reichsmarks per quintal) . . . . .	16.10	16.10	16.10	16.10	16.10	15.86	19.77	16.41	19.52
Antwerp: Danubian (francs p. quintal) . . . . .	53.00	54.00	53.00	53.00	53.10	77.00	65.75	77.25	73.25
London: English malting (shillings p. 448 lbs.) . . . . .	35/6	35/6	35/6	35/6	38/10 1/4	37/6	38/7	39/4	35/8
London and Liverpool, c. i. f., parcels (shillings per 400 lbs.):									
Danubian 3 % . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	14/9	n. q.	15/2
Russian (Aoff-Black sea) . . . . .	15.6	15/9	n. q.	n. q.	16 1/4 1/2	23/4	13/1	18/11	14/3
Canadian Western, N. 3) . . . . .	17/-	17/-	18/-	19/9	19/3	23/2	14/3	20/11	15/11
Californian malting (shillings p. 448 lbs.) . . . . .	20/6	20/6	22/3	22/3	22 1/4 1/2	38/6	24/10	33/4	27/8
Groningen (c): Home-grown winter (fl. p. quintal) . . . . .	4.55	4.50	4.55	4.60	4.61	5.61	4.50	5.87	4.97

n. c. = not quoted. — n. = nominal. — a) Saturday prices. — b) Thursday prices. — c) Prices of preceding Tuesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) Owing to the freezing of the Danube the Braila exchange was closed from 20 January to 1 March 1933. For this period quotations for Costanza are given. — 3) August-Dec. 1930: 78 Kg. p. hl. Jan. 1931 - Jan. 1932: 79 Kg. p. hl.; Feb-Dec. 1932: 80 Kg. p. hl.; afterwards: 79 Kg. p. hl. — 4) From July 1931: No. 1 Hard Winter, Gulf. — 5) German on sample: 17. 10 and 3 Feb.: n. q.; 27 Jan.: 21 1/4 1/2; January average: 22/-; — 6) August-Nov. 1930: 62 1/2 lbs. per bushel; Dec. 1930 - Feb. 1931: 63 1/2 lbs.; March - Nov. 1931: 63 lbs.; Dec. 1931: 63 1/2 lbs.; Jan.-Dec. 1932: 64 lbs.; afterwards 63 1/2 lbs. — 7) From April, 1932, dollars per quintal. — 8) 20 Jan.: 14.20. — 9) 20 Jan.: n. q. — 10) 20 Jan.: 30-6-0. — 11) No. 1, Hard Winter. — 12) New crop. — 13) 20 Jan.: 6.05. — 14) 20 Jan.: 205. — 15) 20 Jan.: 25 1/4.

PRODUCTS, MARKETS AND DESCRIPTION	17	10	3	27	AVERAGE 1)				Commercial Season	
	Feb.	Feb.	Feb.	Jan.	Jan	Feb	Feb.			
	1933	1933	1933	1933	1933	1932	1931	1931-32	1930-31	
OATS.										
Braila: Good quality (let p. quintal) 2) . . . . .	n. q.	n. q.	n. q.	n. q.	*) —	294	219	285	247	
Winnipeg: No. 2 White (cents per 34 lbs.) . . . . .	23 <sup>7</sup> / <sub>8</sub>	23 <sup>1</sup> / <sub>8</sub>	22 <sup>3</sup> / <sub>8</sub>	23	*) 22 <sup>3</sup> / <sub>8</sub>	29 <sup>1</sup> / <sub>2</sub>	27 <sup>1</sup> / <sub>4</sub>	31 <sup>3</sup> / <sub>8</sub>	30	
Chicago: No. 2 White (cents per 32 lbs.) . . . . .	17 <sup>1</sup> / <sub>8</sub>	17 <sup>1</sup> / <sub>2</sub>	16 <sup>3</sup> / <sub>4</sub>	17	17 <sup>1</sup> / <sub>4</sub>	24 <sup>1</sup> / <sub>4</sub>	32 <sup>3</sup> / <sub>4</sub>	24 <sup>1</sup> / <sub>4</sub>	32 <sup>3</sup> / <sub>4</sub>	
Buenos Aires (a): Current quality (pesos paper p quintal) . . . . .	4.05	4.00	3.90	3.95	4.00	4.99	3.26	5.33	3.58	
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	11.95	11.55	11.55	11.15	11.34	14.85	14.35	15.10	16.17	
Paris: Home grown, black and other (francs p. quintal) . . . . .	77.25	80.50	80.25	81.00	80.05	105.80	79.75	101.75	81.00	
London: Home grown white (shillings p. 336 lbs.). London and Liverpool c. i. f., parcels (shillings p. 320 lbs.) . . . . .	18/-	18/-	18/-	18/-	18/-	21/-	17.6	21/3	18/4	
Danubian (39 10 lbs.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 12/1	
Plate (f. a. q.) . . . . .	11/6	11/6	11/9	11/9	12/11 <sup>1</sup> / <sub>2</sub>	14/8	9/4	14/5	10/9	
Chilian Tawny . . . . .	n. q.	*) 13/-	*) 12/9	*) 13/-	n. q.	n. q.	10/7	n. 16/-	12/-	
Milan (b): spot (lire p. quintal): Home crown . . . . .	63.50	n. q.	67.50	67.50	67.50	76.50	73.50	73.60	73.95	
Foreign imported . . . . .	56.00	n. q.	57.00	58.00	58.75	65.00	57.00	65.20	60.40	
MAIZE.										
Braila: Danubian (let p. quintal) 2) . . . . .	183	183	187	n. q.	*) —	176	203	187	210	
Chicago: No. 2 Mixed American (cents p. 56 lbs.). Buenos Aires (a). Yellow Plate (pesos paper p. quintal) . . . . .	24 <sup>3</sup> / <sub>4</sub>	25	24 <sup>1</sup> / <sub>2</sub>	24 <sup>1</sup> / <sub>2</sub>	24	36 <sup>3</sup> / <sub>4</sub>	61 <sup>1</sup> / <sub>2</sub>	34	58 <sup>1</sup> / <sub>4</sub>	
Antwerp, spot (francs p. quintal) . . . . .	4.10	4.32 <sup>1</sup> / <sub>2</sub>	4.55	4.50	4.39	4.40	3.81	4.63	3.82	
Bessarabian . . . . .	51.50	53.00	53.50	53.00	51.50	n. q.	65.50	n. q.	71.25	
Argentine Cinquantino . . . . .	74.00	73.50	72.50	70.50	68.85	54.00	93.75	63.30	81.00	
Yellow Plate . . . . .	52.00	53.50	54.50	54.00	52.75	52.00	64.00	57.20	65.00	
London and Liverpool, parcels, c. i. f. (shillings p. 480 lbs.) 3): . . . . .	17/3	17/9	18/4	19 -	18 7 <sup>1</sup> / <sub>2</sub>	n. q.	n. q.	n. 19 3	n. 17/4	
Danubian . . . . .	17/9	18/-	18 7 <sup>1</sup> / <sub>2</sub>	19 11 <sup>1</sup> / <sub>2</sub>	18 10 <sup>1</sup> / <sub>2</sub>	18 5	15/4	18/2	15 6	
Yellow Plate . . . . .	17/9	17/9	18 -	18 11 <sup>1</sup> / <sub>2</sub>	18 4	n. q.	n. q.	n. 20 11	18/1	
No. 2 White African . . . . .	56.00	n. q.	57.00	57.00	57.75	65.75	49.50	68.70	51.90	
Milan (b): Home grown (lire p. quintal) . . . . .										
RICE (CLEANED).										
Milan (b): Maratelli (lire p. quintal) . . . . .	137.00	n. q.	137.50	138.50	138.60	145.75	110.00	151.25	117.35	
Rangoon: No. 2 Burma (rupees p. 7500 lbs.) . . . . .	200	n. q.	n. q.	n. q.	n. q.	282	236	268 <sup>1</sup> / <sub>4</sub>	249 <sup>1</sup> / <sub>4</sub>	
Saigon (Indo-chinese plaques p. quintal): No. 1 Round white (25 % broken). . . . .	...	...	...	...	*) ..	6.18	7.10	5.48	6.73	
No. 2 Japan (40 % broken). . . . .	...	...	...	...	*) ..	5.66	6.43	5.11	6.20	
London (a). c. i. f. (shillings p. 112 lbs.): Spanish Belloch, No. 3 oiled . . . . .	12.9	13/-	13/3	13.6	13 8 <sup>1</sup> / <sub>4</sub>	14 -	11.6	13.8	11/11	
Italian good, No. 6 oiled . . . . .	11.3	13/3	14/-	14 -	14 -	13.5	12.3	14 -	13/7	
American Blue Rose . . . . .	13/3	13/3	13/6	14.6	14 8 <sup>1</sup> / <sub>4</sub>	19.1	18 10 <sup>1</sup> / <sub>2</sub>	17.2	18/7	
Burma, No. 2 . . . . .	6.9 <sup>3</sup> / <sub>4</sub>	6.9	7 -	7 -	7 11 <sup>1</sup> / <sub>2</sub>	8.11	7.6	8.4	7/11	
Saigon, No. 1 . . . . .	7 -	7 -	7.3	7 7 <sup>1</sup> / <sub>2</sub>	7 7 <sup>1</sup> / <sub>2</sub>	9.5	7/10	8.5	8/1	
Siam, Garden, No. 1 4) . . . . .	7/6	7 7 <sup>1</sup> / <sub>2</sub>	7 10 <sup>1</sup> / <sub>2</sub>	7 10 <sup>1</sup> / <sub>2</sub>	7 9	11.6	9.5	9.5	9/5	
Tokio: Chumai (brown Japanese, average quality, yens p. koku) . . . . .	22.00	22.70	22.80	22.80	23.55	22.50	17.70	21.20	18.46	
LINS&FRD.										
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	8.90	9.00	9.10	9.07 <sup>1</sup> / <sub>2</sub>	9.21	9.42	10.96	9.22	10.82	
Antwerp: Plate (francs p. quintal) . . . . .	100.00	100.00	102.00	103.00	103.35	106.25	164.00	103.25	146.00	
London, c. i. f. (l. p. long ton): La Plata (delivery Hull) . . . . .	8-3-9	8-7-6	8-10-0	8-12-6	8-16-7	8-16-10	9-1-3	8-8-4	8-14-1	
Bombay bold . . . . .	10-11-3	10-17-6	10-18-9	11-10-0	11-10-7	12-18-9	n. q.	11-10-0	11-9-6	
Duluth: No. 1 Northern (cents p. 56 lbs.) . . . . .	*)109 <sup>1</sup> / <sub>4</sub>	*)108 <sup>3</sup> / <sub>4</sub>	*)109 <sup>1</sup> / <sub>2</sub>	*)112 <sup>1</sup> / <sub>4</sub>	*)114 <sup>1</sup> / <sub>4</sub>	*)139	*)156	118 <sup>1</sup> / <sub>4</sub>	148	

n.e. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) See same note on preceding page. — 3) White Russian: 17 Feb.: 16/6; 10 Feb.: n. q.; 3 Feb.: 17/9; 27 Jan.: 18/-; — 3) From January 1932: Special. — 5) 20 Jan. n. q. — 6) 20 Jan.: 22<sup>3</sup>/<sub>4</sub>. — 7) Chilian, mixed. — 8) 20 Jan.: 185. — 9) 20 Jan.: 4.33; 13 Jan.: 4.32; 6 Jan.: 4.28; 30 Dec.: 4.28; 23 Dec.: 4.40; Dec. 1932 average: 4.22. — 10) 20 Jan.: 4.17; 13 Jan.: 4.15; 6 Jan.: 4.12; 30 Dec.: 4.12; 23 Dec.: 4.23; Dec. 1932 average: 4.05. — 11) February-March shipment. — 12) May delivery.

PRODUCTS, MARKETS AND DESCRIPTION	17	10	3	27	AVERAGE 1)				Commercial Season	
	Feb.	Feb.	Feb.	Jan.	Jan.	Feb.	Feb.			
	1933	1933	1933	1933	1933	1932	1931		1931-32	1930-31
<b>COTTON*FIB.</b>										
Alexandria: Sakellaridis (piastres per ardeb) . . .	67.5	73.2	72.0	70.1	74.2	63.7	57.2		60.0	52.2
London: Sakellaridis (delivery Hull: £ p. l. ton) . .	6-17-6	7-3-9	7-5-0	7-5-0	7-11-10	6-11-10	6-1-3		6-3-7	5-12-6
<b>COTTON.</b>										
New Orleans: Middling (cents per lb.) . . . . .	5.93	6.03	5.85	6.11	6.14	6.71	10.64		6.20	10.07
New York: Middling (cents per lb.) . . . . .	6.15	6.15	6.00	6.25	6.25	6.86	10.97		6.35	10.38
Bombay: M. g. Broach f. g. (rupees per 784 lbs.) .	182	186	186	194	200	229	212		181 1/4	191 1/4
Alexandria (talaris per kautar):										
Sakellaridis f. g. f. . . . .	12.45	13.10	12.80	13.15	13.52	13.92	17.77		12.17	17.12
Ashmuni (Upper Egypt) f. g. f. . . . .	11.35	11.75	11.55	11.75	12.13	11.60	12.87		9.73	12.00
Bremen: Middling (U. S. cents per lb.) . . . . .	7.17	7.25	6.99	7.32	7.29	8.06	12.07		7.44	11.59
M. g. Broach fully good (pence per lb.) . . . . .	n. 4.25	n. 4.35	n. 4.35	n. 4.55	n. 4.56	n. 5.50	n. 5.14	n.	4.48	n. 4.63
Le Havre: Middling, Gulf (francs per 50 kg.) . . .	211.00	219.00	213.00	223.00	223.50	224.00	367.00		216.00	348.00
Liverpool (pence per lb.):										
Middling fair . . . . .	n. 6.10	n. 6.24	n. 6.09	n. 6.30	n. 6.41	n. 6.74	n. 7.15	n.	5.85	n. 6.93
Middling . . . . .	4.95	5.09	4.94	5.15	5.26	5.73	5.95		4.79	5.72
São Paulo, good fair . . . . .	n. 5.20	n. 5.34	n. 5.19	n. 5.40	n. 5.51	n. 5.94	6.25	n.	4.98	5.91
M. g. Broach, fully good . . . . .	n. 4.55	n. 4.69	n. 4.55	n. 4.77	n. 4.87	n. 5.47	n. 4.59	n.	4.34	n. 4.25
Sakellaridis, fully good fair . . . . .	7.03	7.29	7.14	7.18	7.40	7.60	9.60		6.76	9.08
<b>BUTTER.</b>										
									1932	1931
Copenhagen (a) Danish (Crs p. quintal). . . . .	170.00	180.00	188.00	171.00	159.25	230.00	243.00		178.70	209.00
Leeuwarden, Commission for the Dutch butter quotations: (florins per kg) . . . . .	0.58	0.67	0.76	0.78	0.72	1.32	1.66		0.94	1.34
Maaslicht, auction (b): Dutch (florins p. kg) . . .	n. q.	n. q.	n. q.	n. q.	n. 1.58	1.32	1.68		1.27	1.38
Hamburg, auction (c): Schleswig-Holstein butter, with quality mark (R. M. per 50 kg.) . . . . .	91.58	91.44	97.95	97.51	97.16	135.43	154.62		115.83	131.22
Kempten (c): Allgau butter (Pfennige p. half kg.) .	80	85	87	87	87	121	126		106 1/4	110
London (d) (shillings p. cwt.):										
British blended . . . . .	116/8	116/8	121/4	121/4	121/4	130/8	141/2	)	131/6	140/4
Danish . . . . .	116/-	116/-	116/-	112/-	115/6	139/6	151/6	)	123/1	133/4
Irish creamery, salted . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	)	n. 110/-	119/3
Dutch . . . . .	118/-	118/-	n. q.	118/-	118/6	n. q.	149/6	)	115/10	132/1
Argentine . . . . .	84/-	85/-	86/-	88/-	90/9	110/3	124/-	)	103/10	117/7
Siberian 5) . . . . .	78/-	78/-	n. q.	n. q.	89/-	n. q.	n. q.	)	n. 93/6	n. q.
Australian, salted . . . . .	81/-	82/-	84/-	86/-	87/9	108/6	122/3	)	105/8	116/8
New Zealand, salted . . . . .	85/-	86/-	86/-	87/-	88/6	111/3	125/-	)	110/-	119/11
<b>CHEESE.</b>										
Milan (lire per quintal).										
Parmigiano-Reggiano, 1st quality of last year's production . . . . .	...	1,012.00	1,012.00	1,012.00	1,012.00	975.00	1,112.00		1,016.00	1,103.00
Green Gorgonzola, mature, choice . . . . .	...	575.00	575.00	575.00	588.75	470.00	660.00		512.70	616.00
Rome: Roman pecorino, choice (lire p. quintal) .	1,225.00	1,250.00	1,250.00	1,250.00	1,250.00	1,162.00	1,081.00		1,251.00	1,121.00
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheesemark, factory cheese, small; florins p. 50 kg.) . . . . .	25.00	24.00	n. q.	25.00	25.37	29.50	35.87		24.41	32.63
Gouda: Gouda 45 + (whole milk cheese, with the country's cheesemark, home made; florins p. 50 kg) . . . . .	29.00	29.00	29.00	30.00	29.62	30.62	40.00		26.92	37.93
Kempten (c); (Pfennige per half kg.) . . . . .	18	18	18	18	18	17 1/8	23 1/8		21	24
Soft cheese, green (20 % butterfat). . . . .	74 1/2	74 1/2	74 1/2	74 1/2	74 1/2	83	98 1/2		81 1/2	97 1/2
Emmenthal from the Allgau (whole milk cheese) 1st quality . . . . .	74 1/2	74 1/2	74 1/2	74 1/2	74 1/2	83	98 1/2		81 1/2	97 1/2
London (d) (shillings per cwt.):										
English Cheddar . . . . .	104/-	104/-	104/-	104/-	106/-	115/-	97/-	)	109/-	99/10
Canadian . . . . .	71/6	71/6	72/-	73/-	73/3	76/-	82/6	)	72/9	75/9
New Zealand . . . . .	56/-	56/-	56/-	56/6	56/6	64/6	59/3	)	63/2	63/2
Liverpool (d): Engl. Cheshire, ungraded (sh p. cwt.)	65/4	79/4	93/4	93/4	93/4	134/2	98/-	)	103/11	94/3

n. c. = not quoted. — n. = nominal. — a) Thursday prices. — b) Prices of preceding Tuesday. — c) Wednesday prices. — d) Average prices for weeks ending on preceding Wednesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) 20 Jan.: 156.00. — 3) 19 Jan.: 0.72.

4) The method of quotation has been changed as from January 1932; actual prices are generally 3 Pf. higher than according to the former system. — 5) September 1932-Jan. 1933: Russian. — 6) 20 Jan.: 25.00. — 7) 21 Jan.: 29.50. — 8) Provisionary average.





# INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER \*

COUNTRIES AND CLASSIFICATIONS	Jan.	Dec	Nov.	Oct.	Sept.	August	Jan.	Jan.	Year	
	1933	1932	1932	1932	1932	1932	1932	1931	1932	1931
									1) 1932	1931
<b>GERMANY</b>										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of vegetable origin . . . . .	95.7	96.6	99.1	100.3	104.2	108.6	115.3	111.6	112.0	119.3
Livestock . . . . .	57.9	60.6	63.5	66.2	67.5	71.5	65.7	97.5	65.5	83.0
Livestock products . . . . .	87.5	96.9	103.4	98.7	94.8	90.3	92.1	119.4	93.9	108.4
Feeding stuffs . . . . .	81.9	83.2	84.4	85.2	87.1	90.5	92.0	90.9	91.6	101.9
Total agricultural products . . . . .	80.9	84.4	87.8	88.0	89.0	91.0	92.1	106.7	91.3	103.8
Fertilizers 2) . . . . .	70.8	70.2	69.8	69.4	69.2	68.5	71.3	82.3	—	76.5
Agricultural dead stock . . . . .	112.5	113.1	113.6	113.9	114.2	115.1	122.6	134.9	116.1	130.7
Finished manufactures (« Gebrauchs- güter ») . . . . .	111.4	112.0	112.5	113.0	113.8	114.3	126.9	147.1	117.5	140.1
Wholesale products in general . . . . .	91.0	92.4	93.9	94.3	95.1	95.4	100.0	115.2	96.5	110.9
<b>ENGLAND AND WALES</b>										
(Ministry of Agriculture and Fisheries)										
Average of corresponding months										
1911-13 = 100.										
Agricultural products . . . . .	107	103	101	100	104	105	122	130	109	120
Feeding stuffs . . . . .	92	90	90	89	92	97	95	78	95	83
Fertilizers . . . . .	98	89	88	87	87	89	91	102	90	96
Wholesale products in general 3) . . . .	91.5	91.4	91.6	91.5	94.6	94.9	99.6	100.8	94.9	97.7
<b>ARGENTINA</b>										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed . . . . .	53.8	52.2	55.5	60.0	64.1	62.9	55.8	53.6	59.5	55.8
Meat . . . . .	51.2	56.8	60.9	65.3	68.3	70.1	75.8	94.9	69.8	94.3
Hides and skins . . . . .	54.5	51.4	54.7	54.6	61.7	52.8	62.7	69.1	53.1	64.5
Wool . . . . .	42.1	36.8	40.7	45.2	48.0	43.1	49.1	50.6	44.2	61.2
Dairy products . . . . .	53.9	53.3	53.7	53.7	56.2	57.3	58.8	68.7	56.9	74.5
Forest products . . . . .	70.9	68.5	64.9	65.2	62.5	61.6	79.3	108.7	68.4	99.3
Total agricultural products . . . . .	53.5	51.9	55.1	59.0	62.7	61.1	58.7	63.3	59.1	63.8
<b>CANADA</b>										
(Internal Trade Branch										
of the Dominion Bureau of Statistics)										
1926 = 100.										
Field products (grain, etc.) . . . . .	35.1	33.6	36.6	36.8	38.9	41.7	42.0	42.2	40.7	43.6
Animals and animal products . . . . .	57.9	57.8	56.9	58.4	60.2	59.3	68.8	92.1	60.9	77.6
Total Canadian farm products . . . . .	43.6	42.7	44.2	44.9	46.9	48.3	52.0	60.9	48.3	56.3
Fertilizers . . . . .	72.3	72.3	72.3	72.3	72.0	72.4	71.0	89.3	71.8	82.6
Consumer's goods (other than foodstuffs, etc) . . . . .	76.7	78.2	78.3	78.6	78.9	78.6	79.8	82.8	78.8	80.0
Wholesale products in general . . . . .	63.9	64.0	64.8	65.0	66.9	66.8	69.4	75.9	67.0	72.1
<b>ESTONIA</b>										
(Central Bureau of Statistics)										
1913 = 100.										
Commodities imported 4) . . . . .	...	111	112	112	112	113	117	128	113	129
Commodities exported . . . . .	58	59	63	57	54	51	60	80	58	76
Agricultural products imported and export- ed 4) . . . . .	...	74	77	72	70	67	76	93	74	91

\* For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication "Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer" (Rome, 1930), as well as to pages 77 to 79 of the "Crop Report" of January 1932 and to page 517 of the "Crop Report" of July 1932.

1) Most data for 1932 are provisional. — 2) From July 1932 new series — 3) Calculated by the "Statist", reduced to base-year 1913 = 100. — 4) From January 1932 the price of rye is excluded from the calculations.

COUNTRIES AND CLASSIFICATIONS	Jan. 1933	Dec. 1932	Nov. 1932	Oct. 1932	Sept. 1932	August 1932	Jan. 1932	Jan. 1931	Year	
									1932 1)	1931
<b>UNITED STATES</b> (Bureau of Agricultural Economics) Average 1909-10 to 1913-14 = 100.										
Cereals . . . . .	34	33	34	36	41	43	52	77	44	63
Fruits and vegetables . . . . .	59	59	57	59	68	79	70	108	71	98
Meat animals . . . . .	51	52	57	60	67	69	68	112	63	93
Dairy products . . . . .	68	69	68	68	67	65	85	107	70	94
Poultry and eggs . . . . .	96	121	115	102	84	75	87	110	80	96
Cotton and cottonseed . . . . .	45	43	47	51	57	51	45	72	46	63
Total agricultural products . . . . .	51	52	54	56	59	59	63	94	57	80
Commodities purchased by farmers 2) . . . . .	105	106	106	107	106	108	118	138	111	129
Agricultural wages 2) . . . . .	—	—	—	84	—	—	98	129	...	116
<b>UNITED STATES</b> (Bureau of Labor) 1926 = 100.										
Grains . . . . .	32.9	31.7	33.2	34.4	37.4	38.2	46.7	62.4	39.4	53.0
Livestock and poultry . . . . .	37.8	38.7	41.9	45.0	51.2	52.8	53.4	75.2	48.3	63.9
Other farm products . . . . .	48.7	51.3	53.9	52.1	52.1	50.8	54.8	76.0	51.4	69.2
Total agricultural products . . . . .	42.6	44.1	46.7	46.9	49.1	49.1	52.8	73.5	48.2	64.8
Agricultural implements . . . . .	84.5	84.5	84.6	84.7	84.9	84.9	85.5	94.7	84.9	94.0
Fertilizer materials . . . . .	62.3	63.1	63.3	63.4	63.6	66.4	69.9	81.4	66.9	76.8
Mixed fertilizers . . . . .	62.7	65.6	65.6	66.5	66.9	68.3	75.5	90.4	69.4	82.0
Cattle feed . . . . .	38.2	37.1	40.8	42.7	45.9	47.4	53.0	75.0	45.9	62.7
Non-agricultural commodities . . . . .	64.9	66.5	67.5	68.1	68.7	68.5	70.3	78.2	68.4	73.0
Wholesale product in general . . . . .	61.0	62.6	63.9	64.4	65.3	65.2	67.3	77.0	64.9	71.1
<b>FINLAND</b> (Central Bureau of Statistics) 1920 = 100.										
Cereals . . . . .	..	89	90	89	87	86	96	75	90	77
Potatoes . . . . .	..	71	69	68	68	71	68	68	71	68
Fodder . . . . .	..	66	67	67	65	66	73	59	69	63
Meat . . . . .	..	57	54	56	61	64	57	74	61	64
Dairy products . . . . .	..	77	80	76	74	71	90	73	76	76
Total agricultural products . . . . .	..	72	74	72	72	72	78	74	74	72
Wholesale products in general . . . . .	..	90	91	90	90	89	94	86	90	84
<b>HUNGARY</b> (Central Bureau of Statistics) 1913 = 100.										
Agricultural and livestock products . . . . .	71	68	69	75	80	80	89	79	—	—
Wholesale products in general . . . . .	82	81	82	80	90	89	98	91	—	—
<b>ITALY</b> (Consiglio Provinciale dell'Economia Corporativa di Milano) 1913 = 100.										
National agricultural products . . . . .	314.67	322.97	327.61	326.81	328.66	322.08	350.71	347.90	339.63	343.11
Wholesale products in general . . . . .	296.49	298.95	301.89	304.33	306.70	300.06	325.92	361.86	309.91	341.57
<b>NEW ZEALAND</b> (Census and Statistics Office) Average 1909-13 = 100.										
Dairy produce . . . . .	82.7	83.9	94.5	102.4	96.6	95.5	90.4	98.6	93.8	98.9
Meat . . . . .	123.0	108.7	100.3	95.5	100.0	109.0	117.5	150.1	109.1	130.1
Wool . . . . .	61.1	52.7	60.0	66.8	66.4	57.8	66.2	64.0	61.3	67.9
Other pastoral produce . . . . .	59.8	61.7	62.0	63.1	53.4	57.9	70.9	87.0	62.2	76.7
All pastoral and dairy produce . . . . .	85.0	79.9	84.2	88.1	86.0	85.8	89.0	101.1	86.4	96.5
Field products . . . . .	116.4	96.8	95.6	95.4	95.7	83.1	113.0	119.2	101.7	115.5
Total agricultural products . . . . .	85.8	80.4	84.5	88.3	86.2	85.7	89.7	101.6	86.8	97.0

1) Most data for 1932 are provisional. — 2) 1910-14 = 100.

COUNTRIES AND CLASSIFICATIONS	Jan.	Dec.	Nov.	Oct.	Sept.	August	Jan.	Jan.	Year	
	1933	1932	1932	1932	1932	1932	1932	1931	1932	1931
<b>NORWAY 1)</b>										
(Kgl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals . . . . .	119	116	116	116	118	118	123	102	125	112
Potatoes . . . . .	79	75	72	75	73	86	137	180	130	150
Pork . . . . .	99	98	95	100	94	87	95	89	96	186
Other meat . . . . .	106	106	101	105	109	115	113	184	218	138
Eggs . . . . .	93	111	142	120	109	85	90	107	108	96
Dairy products . . . . .	118	128	131	131	132	125	129	139	156	129
Concentrated feeding stuffs . . . . .	103	103	104	104	106	107	109	107	121	103
Maize . . . . .	89	87	91	92	95	94	86	89	108	87
Fertilizers . . . . .	91	89	87	81	89	89	91	96	105	90
<b>NETHERLANDS</b>										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Vegetable products . . . . .	40	41	43	44	46	49	58	62	58	72
Animal products . . . . .	50	50	55	55	51	49	53	74	57	77
Total agricultural products . . . . .	48	48	51	52	50	49	54	71	57	76
Agricultural wages . . . . .	83	83	83	83	83	83	95	100	93	99
Wholesale products in general 3) . . . .	50.7	51.4	52.1	52.1	51.4	50.7	56.8	71.0	77.8	65.7
<b>POLAND 4)</b>										
(Central Bureau of Statistics)										
1917 = 100.										
Vegetable products . . . . .	42.2	38.8	40.8	41.8	42.7	43.7	52.7	44.3	49.8	53.9
Worked-up plant products . . . . .	54.1	51.1	52.7	53.8	55.2	59.1	62.6	59.3	61.3	65.9
Total products of plant origin . . . .	48.0	44.8	46.7	47.8	48.9	51.2	57.8	51.5	55.6	60.0
Animals . . . . .	37.3	37.6	39.2	41.4	43.7	45.6	37.5	54.9	43.1	55.8
Dairy products . . . . .	52.8	55.4	67.1	53.5	55.8	47.7	56.9	83.1	55.4	68.0
Total products of animal origin . . . .	43.8	44.9	50.1	46.7	49.0	46.8	45.4	66.2	48.2	60.8
Total agricultural products . . . . .	46.1	44.8	48.1	47.3	48.9	48.9	51.8	56.9	52.0	59.7
Fertilizers . . . . .	110.8	107.6	107.6	112.9	112.9	112.9	108.4	124.7	105.5	120.2
Industrial products . . . . .	64.8	65.8	67.1	68.5	69.7	69.7	74.4	84.1	69.6	79.4
Wholesale products in general . . . .	56.4	56.2	58.5	58.8	60.2	60.2	63.9	71.6	61.6	70.5
<b>YUGOSLAVIA</b>										
(National Bank of the Kingdom of Yugoslavia)										
1926 = 100.										
Vegetable products . . . . .	65.4	61.6	59.7	58.1	57.7	64.0	69.0	71.7	67.5	96.7
Animal products . . . . .	57.2	57.3	60.2	58.5	56.8	53.6	60.5	82.0	56.6	97.7
Industrial products . . . . .	73.0	68.1	67.6	67.5	64.0	63.4	69.2	72.8	66.2	80.2
Wholesale products in general . . . .	67.6	64.8	64.7	63.9	61.8	62.6	67.0	75.7	65.2	88.8

1) The agricultural years refer to the period April 1-March 31. — 2) Agricultural year July 1-June 30. — 3) Calculated by the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100. — 4) Average data for the year 1932 are provisional.

# RATES OF FREIGHT

(Rates for entire cargoes)

VOYAGES	17	10	3	27	AVERAGE					Commercial Season	
	Feb	Feb	Feb	Jan	Jan	Feb	Feb	Commercial	Season	1931	1932
	1933	1933	1933	1933	1933	1932	1931	Season	1931	1932	1933
SHIPMENTS OF WHEAT AND MAIZE											
Danube to Antwerp/Hamburg	(shill per long ton)	n q	n q	n q	n q	n q	n q	14/6	13/11	14/6	13/11
Black Sea to Antwerp/Hamburg		10/4 <sup>1</sup>	10/6	10/9	11/	11/-	11/-	10/10	10/10	10/10	10/10
St John to Liverpool 1)		1/6	1/6	1/6	1/6	1/6	1/6	1/7	1/6	1/6	1/6
Port Churchill to United Kingdom	(shill per 480 lbs)	n q	n q	n q	n q	n q	n q	0 08	1/10	0 08	1/10
Montreal to United Kingdom		n q	n q	n q	n q	n q	n q	2 6	2 3	2 6	2 3
Gulf to United Kingdom		<sup>1</sup> 2 3	<sup>1</sup> 2 3	<sup>1</sup> 2 3	<sup>1</sup> 2 3	<sup>1</sup> 2 3	<sup>1</sup> 2 3	1 8	1 6	1 8	1 6
New York to Liverpool 1)		1 6	1 6	1 6	1 6	1 6	1 6	0 09	1 9	0 09	1 9
Northern Range to U K/Continent		n q	n q	n q	<sup>1</sup> 0 06	<sup>1</sup> 0 06	<sup>1</sup> 0 13	n 1 7 1/2			
North Pacific to United Kingdom (sh per long ton)		21	23 6	27 6	n 23 -	<sup>1</sup> 23 1/2	<sup>1</sup> 23 1/2	n 22 2	n 22 2	n 22 2	n 22 2
Vancouver to Yokohama 1) (gold \$ per sh ton)		2 05	2 05	2 05	2 25	2 25	2 25	2 45	2 30	2 45	2 30
La Plata Down River 2) to U K Continent		14	15 -	15 6	1 1/1	16 1	17 7	17 1	16 1/2	16 1/2	16 1/2
La Plata Up River 3) to U K Continent	(shill per long ton)	16 3	16 6	17	17 6	17 6	18 11	19 7	17 6	18 1/2	19 3
Karachi to U K/Continent 4)		n q	n q	n q	n q	n q	n q	n q	n q	n q	n q
Western Australia to U K/Continent		26	26 3	26 3	26 6	27 4 <sup>1</sup>	27 7	30 -	26 -	29 8	29 8
SHIPMENTS OF RICE											
Batavia to Europe	(shill per long ton)	26 3	26 3	27 6	27 6	27 3	27 3	27 3	27 3	27 3	27 3
Burma to U K/Continent		23 9	23 9	25 6	n 25 6	n 25 6	24 3	n 23 4	n 23 4	n 23 4	n 23 4

n q net quantity n n n n 1) Rates for parcels by liners — 2) Down River includes the ports of Buenos Aires and La Plata — 3) Up River includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine Santa Fe and Paraná) are subject to an extra rate of freight — 4) The original data being quoted in scale terms 10 % is added to arrive at rates per long ton — 5) Freight in gold \$ per 100 lbs (in the case of a loss of 30 % in the value of the shilling 10 % per 100 lbs are equal to 2 10 per quarter) — 6) Vancouver Shanghai (gold \$ per short ton) Jan 2 40 Feb 2 30 — 7) 20 Jan (rectified) 2 76

# EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT OF THEIR PARITY WITH THE DOLLAR

COUNTRY	Exchange	Exchange rates				Percentage premium				1933	
		1933	1933	1933	1933	1933	1933	1933	1933	1933	1933
		1933	1933	1933	1933	1933	1933	1933	1933	1933	1933
Germany 1)	Berlin	4 213	4 213	4 213	4 213	- 0 4	- 0 4	- 0 4	- 0 4	- 0 4	- 0 4
Argentina 1)	New York	25 570	25 750	25 750	25 750	- 39 3	- 39 3	- 39 3	- 39 3	- 39 3	- 39 3
Belgium 1)	Brussels	35 570	35 916	35 927	35 962	+ 1 1	+ 1 1	+ 0 1	+ 0 1	+ 0 1	+ 0 1
Canada 1)	New York	84 562	83 312	84 062	85 812	- 16 4	- 16 7	- 16 9	- 16 9	- 16 9	- 16 9
Denmark 1)	Copenhagen	6 552	6 579	6 615	5 900	- 43 1	- 43	- 43 6	- 43 6	- 43 6	- 43 6
Egypt	London 2)	17 203	17 147	16 984	16 934	- 29 3	- 29 3	- 30 2	- 30 2	- 30 2	- 30 2
Great Britain 1)	Paris 3)	25 345	25 597	25 617	25 612	0 7	- 0 3	- 0 4	- 0 3	- 0 3	- 0 3
France 1)	Budapest	5 715	5 715	5 720	5 720	0 1	0 1	0 0	0 0	0 0	0 0
Indo China	Tonkin	25 984	25 899	25 654	25 574	- 28 4	- 29 1	- 29 7	- 29 7	- 29 7	- 29 7
Hungary 1)	Milan	19 535	19 540	19 540	19 540	- 2 7	- 2 6	- 2 8	- 2 8	- 2 8	- 2 8
India 1)	New York	20 810	21 250	21 120	21 060	- 58 3	- 57 4	- 57 6	- 57 6	- 57 6	- 57 6
Italy 1)	Amsterdam	2 479	2 491	2 488	2 489	0 3	0 1	0 0	0 0	0 0	0 0
Japan 1)	Warsaw	8 910	8 976	8 923	8 928	0 0	0 1	0 1	0 1	0 1	0 1
Netherlands 1)	New York	0 600	0 600	0 605	0 605	0 3	0 3	1 2	1 2	1 2	1 2
Poland 1)	Stockholm	5 500	5 455	5 440	5 445	- 32 2	- 31 6	- 31 4	- 31 4	- 31 5	- 31 5
Rumania 1)	Prague	33 700	33 780	33 800	33 810	+ 0 2	- 0 1	- 0 1	- 0 1	- 0 1	- 0 1
Sweden 1)											
Czechoslovakia 1)											

a) Value of the United States dollar expressed in national currency — 1) Value of the national currency expressed in United States cents — 2) The percentage represents the premium or the loss as far as possible on the national exchange — 3) As the relation between the Egyptian pound and the pound sterling remains unchanged the exchange rate of the latter only is given — 4) As the relation between the Indo-Chinese piastre and the French franc changed only slightly the exchange rate of the latter only is given — 5) These rates have been obtained by converting the original quotations in pence per rupee into cents per rupee

# RECIPROCAL PARITIES OF THE VARIOUS CURRENCIES IN WHICH ARE QUOTED THE PRICES IN THE MONTHLY AND THE QUARTERLY PRICE REVIEWS (1)

COUNTRIES	Unit of Currency	Germany	Argentina	Belgium	Canada	United States	Denmark	Sweden	Italy	India	Japan	Netherlands	Poland	Rumania	Czechoslovakia	Former Latin monetary union (3)		
Germany . . . . .	Reichsmark	1 000	0 561	8 566	0 238	0 889	4 819	6 080	0 979	1 352	0 653	4 526	0 478	0 593	2 123	39 825	8 040	1 235
Argentina . . . . .	Paper peso	1 782	1 000	15 263	0 424	1 584	8 386	10 833	1 744	2 427	1 163	8 064	0 851	1 056	3 872	70 959	14 326	2 200
Belgium . . . . .	Franc	0 117	0 065	1 000	0 028	0 104	0 563	0 710	0 114	0 159	0 076	0 528	0 056	0 069	0 248	4 649	0 939	0 145
Canada . . . . .	Dollar	4 198	2 356	35 959	1 000	3 731	26 230	25 524	4 110	5 718	2 740	19 000	2 006	2 488	8 914	167 181	33 751	5 183
United States . . . . .																		
Denmark . . . . .	Crown	1 125	0 631	9 637	0 268	1 000	5 422	6 840	1 101	1 532	0 734	5 092	0 538	0 667	2 389	44 803	9 045	1 389
Sweden . . . . .																		
Egypt . . . . .	Piastre	0 207	0 116	1 777	0 049	0 184	1 000	1 262	0 203	0 283	0 135	0 939	0 099	0 123	0 441	8 264	1 668	0 256
France . . . . .	Franc	0 164	0 092	1 409	0 039	0 146	0 793	1 000	0 161	0 224	0 107	0 744	0 079	0 097	0 349	6 550	1 322	0 203
Indo-China . . . . .	Piastre (2)																	
Great Britain . . . . .	Shilling	1 021	0 573	8 750	0 243	0 908	4 923	6 211	1 000	1 391	0 667	4 623	0 488	0 605	2 169	40 680	8 213	1 261
Hungary . . . . .	Pengo	0 734	0 412	6 289	0 175	0 653	3 580	4 464	0 720	1 000	0 479	3 323	0 351	0 435	1 559	29 240	5 903	0 905
India . . . . .	Rupce	1 532	0 860	13 125	0 365	1 362	7 384	9 316	1 500	2 087	1 000	6 935	0 732	0 908	3 254	61 020	12 319	1 892
Italy . . . . .	Lira	0 221	0 124	1 892	0 053	0 195	1 065	1 343	0 216	0 301	0 144	1 000	0 106	0 131	0 469	8 799	1 776	0 273
Japan . . . . .	Yen	2 092	1 174	17 924	0 498	1 860	10 084	12 723	2 049	2 850	1 366	9 471	1 000	1 240	4 443	83 333	16 824	2 583
Netherlands . . . . .	Florin	1 687	0 947	14 454	0 402	1 450	8 132	10 266	1 652	2 298	1 101	7 637	0 806	1 000	3 583	67 200	13 567	2 083
Poland . . . . .	Zloty	0 471	0 264	4 034	0 112	0 419	2 269	2 863	0 461	0 641	0 307	2 131	0 225	0 279	1 000	18 755	3 786	0 581
Rumania . . . . .	Leu	0 025	0 014	0 215	0 006	0 022	0 121	0 153	0 025	0 034	0 016	0 114	0 012	0 015	0 053	1 000	0 202	0 031
Czechoslovakia . . . . .	Crown	0 124	0 070	1 065	0 030	0 111	0 599	0 756	0 122	0 169	0 081	0 563	0 059	0 074	0 264	4 953	1 000	0 154
Former Latin monetary union (3) . . . . .	Gold Franc	0 810	0 455	6 938	0 193	0 720	3 903	4 925	0 793	1 103	0 529	3 666	0 387	0 480	1 720	32 258	6 512	1 000

(1) Each figure gives the equivalent in the currency of the country indicated at the head of the respective column of the currency unit indicated at the beginning of the respective line.  
(2) 1 Gold piastre equals 10 francs. — (3) Data for purpose of comparison.

# MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

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*The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.*

## WORLD WHEAT SUPPLIES AND REQUIREMENTS

Last October we estimated on the basis of the information and provisional figures then available that the 1932 wheat crop was very considerably greater than requirements for consumption and therefore forecast that there would in the current season be an increase on the exportable stocks of wheat existing on 1 August 1932, an increase calculated in October at 100 million bushels and in November at 60 million bushels; the latter figure has not been modified. The estimates of the 1932 crop being now complete and for the majority of countries even revised and the official data for trade in the first six months of the season being now known, a fresh examination of the supply and demand situation seems useful in order to find whether the forecasts made in October, slightly modified in November following on the reduction of the Canadian crop and subsequently left unchanged, should be changed and if so, to what extent.

### WORLD WHEAT PRODUCTION.

The provisional data made it appear last October that there had been an increase of about 40 million bushels in world production of wheat without taking into account the U. S. S. R., for which the last figures of production are those of 1930. In November, Canada having reduced its estimate by 36 million bushels, total world production was calculated to be practically equal to that of the preceding year. The modifications since made have been numerous and in several cases rather important but nevertheless they confirm on the whole the opinion expressed in October that the margin between the provisional figure and the final estimate would this year be narrower than in preceding years.

In fact, if the estimates of October-November last are compared with those now available, it is seen that though the changes one way or the other have been very many and important they almost exactly balance. As it would occupy too much space to give the detailed figures for the separate countries they have been grouped in the following table according to continents.

*World wheat production (1)*

	(million bushels)						1932	
	1926	1927	1928	1929	1930	1931	Oct/Nov. estimates	March estimates
Europe . . .	1,216	1,275	1,411	1,453	1,363	1,433	1,514	1,488
North America . . .	1,249	1,371	1,492	1,128	1,290	1,235	1,150	1,165
South America . .	272	338	400	220	272	268	276	283
Asia (1) . . . .	382	393	342	382	458	408	397	393
Africa . . . . .	110	118	118	135	118	132	132	132
Oceania . . . . .	169	128	169	136	220	195	206	209
TOTALS . . . . .	3,398	3,623	3,932	3,454	3,721	3,671	3,675	3,670
U S S R . . . . .	915	797	808	698	988	.	.	.

(1) Excluding the U. S. S. R., China, Persia, Turkey and Iraq.

In Europe the decrease of 26 million bushels is due to the reductions in the estimates for Rumania, Yugoslavia, Poland and Germany, which have only in part been balanced by the increases recorded in Spain, Great Britain, Belgium and Estonia. For North America production was calculated in October at 1,187 million bushels, an estimate that fell to 1,150 million in November after the revision for Canada and increased again to 1,165 million on the publication of the final estimates for the United States and Canada. For South America and Oceania, which show an increase, though a small one, the difference is due to Argentina and New Zealand as well as to better information on the crops for some other countries. It should be noted that for the countries of the southern hemisphere, where the harvest has just been carried out, only provisional estimates are yet available while for many South American countries of secondary importance production has been very approximately though cautiously calculated, so that it is not impossible that the final figures will bring further appreciable modifications. For Asia the total figures have been reduced consequent on the decreases in Japan and Syria. As regards the world total the balance is almost perfect, the difference between the two estimates being only 5 million bushels, compared with that of 110 millions reported by us the same time last year.

The world wheat crop of 1932, as now estimated, the U. S. S. R. being, through lack of data, excluded, is almost the same as that of 1931 and may be said to be a good average, exceeding by about 44 million bushels the average of the five years 1926-1930. Production has been exceptionally high in Europe as a whole and in the European importing countries particularly, the Danubian exporting countries having on the other hand had an exceptionally small crop, the smallest since the war. The North American crop is small due to the poor result of the winter crop in the United States. The Asiatic countries for which complete data are available have had on the whole an average production. The remaining Asiatic countries, which do not appear in the table, have had a somewhat deficitary crop, especially in the case of China. Turkey, which has just recently communicated an estimate, is not included in the total for Asia as

data do not exist for all the years considered and in introducing it into the table comparison with the estimate of last October would not have been possible. It should moreover be noted that in this country wheat production varies very greatly from one year to another without these variations having any corresponding repercussion on foreign trade so that in years of abundance there is only a small movement of exports and the poor crop years do not bring about the movement of imports that might be expected. The Turkish crop is estimated this year at 70 million bushels whereas in the preceding three years it varied from 96 to 104 million bushels and amounted to 60 million bushels in 1928. Such a poor crop would seem to permit the forecast of an import to cover the probable home deficit; in the first six months of the season Turkey, on the contrary, continued to export some thousand bushels of wheat each month and it may therefore be supposed that its supplies are assured from home stocks retained from the preceding good crops. In any case, if one considers the poor crops of Turkey and China, the production of Asia, instead of being about average as indicated by the figures in the table, should be greatly below the average.

Lastly, for the countries of the southern hemisphere production has been abundant, decidedly exceeding that of last year, which was on the whole a good average.

For the U. S. S. R., exact estimates are still lacking but it has quite recently been officially recognized that the crop was not abundant and there is reason to believe, in fact, on the basis also of the reduced volume of exports, that the 1932 crop was smaller than that of 1931 and much smaller than the exceptionally abundant one of 1930.

Summarizing, it may be said that if the total production of the countries for which regular statistics are available is approximately the same as in 1931, total world production, including that of the U. S. S. R., China and Turkey, is rather smaller than last year.

#### WHEAT EXPORTABLE SUPPLIES.

In North America, due to the increase in the crop of the United States and the decrease in that of Canada, the exportable surplus for the season 1932-33, calculated last October at 480 millions bushels of Canadian wheat and 370 million of wheat from the United States, is reduced to 440 million for Canada and increased to 380 for the United States. There is therefore for the whole of North America a total exportable surplus of 820 million bushels, representing a decrease of 30 million compared with the preliminary October figure.

For Argentina, it was calculated, on the basis of a probable crop of 130 million bushels and stocks of 39 million on 1 August 1932, that there would be an exportable quantity of 190 millions bushels. Our estimate of the probable production of Argentina made in October coincided perfectly with the first official forecast published in December; quite recently the Argentine Government has revised its estimate, raising it to 235 millions bushels, an increase of 4 million on the



preceding figure. It is considered, however, that this should not modify the estimate of the quantity exportable from this country, as the data of exports from August to December 1932 seem to indicate that the stocks in existence on 1 August were slightly overestimated in the official estimate given above.

For Australia, the government has several times confirmed its first estimate communicated on 17 October last; it seems, however, very probable that the final estimate will indicate a rather larger crop due chiefly to the good quality and heaviness of the grain; the increase should not, in any case, be of the same magnitude as last year (10 %). The exportable stocks in existence in this country on 1 August last seem to have been slightly under-estimated. In order to take into account these various factors it seems opportune to modify somewhat the quantities available for export in Australia, increasing them from 180 to 195 million bushels.

India has figured on the world market, as was anticipated last October, with only insignificant quantities. The new crop, which will be harvested next month from an area about 1,400,000 acres less than in 1932, promises to be not very abundant due to the drought which persisted during the first few months of the year and which lasted too long into the season; the possibility is therefore excluded that India may again in the coming months play an important part in the wheat export trade and it appears, on the contrary, to be probable that the country may be an importer in the coming season.

For the U. S. S. R., in the absence of any crop estimate, we expressed the opinion last October that exports from this source should this season be much smaller than in the preceding two seasons and on this basis a conjectural figure of 30 million bushels was calculated. The actual exports in the first six months of the present season amounted to 14 million bushels and it seems difficult, judging from the statements made by the official authorities themselves regarding the smallness of the 1932 crop, for the quantity forecast to be attained. The quantity exportable this year from the U. S. S. R. is consequently reduced to 18 million bushels.

The Danubian countries, which, according to the preliminary estimates available in October, announced an extremely low production, one third below that of 1931, have again reduced their estimate, which is now 220 million bushels, the lowest level reached in the post-war period. It was indicated in the Crop Report of last October that even with such a very poor crop, these countries would be in a position to export some quantities of wheat, thanks to the possibility of substituting maize for wheat in home consumption, the former having fortunately yielded an abundant crop; these exportable quantities were calculated at 10 million bushels; this amount has already been almost reached during the first half year of the season and as there are still some supplies in Hungary it is estimated that the figure of the surplus in these countries should be changed to 14 million.

For North Africa, the figure of the quantity exportable, calculated at 10 million bushels last October, has already been exceeded by the export of the first half of the season. As there is reason to consider the probability of important shipments in June-July out of the surplus of the new crop, the figure for this source should be increased and the exportable quantity calculated at 15 million.

*Exportable quantities of Wheat.*

	(Million bushels)						1933/33	
	1926/27	1927/28	1928/28	1929/30	1930/31	1931/32	October forecast	March estimate
Canada . . . . .	338	404	514	310	400	334	480	440
U. S. A. . . . .	272	272	340	382	371	456	370	380
Argentina . . . . .	195	250	323	187	184	176	190	190
Australia . . . . .	129	96	136	100	202	188	180	195
U. S. S. R. . . . .	40	0	0	10	114	68	30	18
India . . . . .	11	8	0	0	0	0	0	0
Danubian Countries	44	31	35	53	44	81	10	14
North Africa . . .	0	10	14	15	15	22	10	15
Afloat. . . . .	39	46	15	37	39	38	30	30
TOTALS . . .	1,068	1,117	1,416	1,094	1,369	1,363	1,300	1,282

Summarizing, the exportable surpluses in existence in the various surplus producing countries and the quantities afloat show in total, as may be seen from the following table, a small decrease of about 20 million bushels compared with the forecast of last October. The total of the quantities exportable during the present season shows a considerable decrease compared with both the past season and 1930-31. Among the various exporting countries only Canada shows a really considerable increase in its exportable surplus, whereas the other countries have quantities nearly equal to those of last season, as in the two countries of the southern hemisphere, or much smaller quantities, as in the United States, the U. S. S. R. and the Danubian and North African countries.

As regards the trade of the current season the official figures of net exports of the various countries during the first six months of the season (1 August 1932-31 January 1933) are now known, permitting an estimate of the exportable remainder as on 1 February 1933 and a comparison of the situation in the present season, as resulting from the data at present available, with that of last season.

*Exportable surpluses of wheat at the beginning and at the middle of the season.*

	(million bushels)					
	Season 1932-33			Season 1931-32		
	Total exportable surplus	Export from 1 August 1932 to 31 Jan 1933	Exportable remainder on 1 Feb. 1933	Total exportable surplus	Exportable remainder on 1 Feb. 1932	Exportable remainder on 1 Aug. 1932
Canada . . . . .	440	156	284	334	230	125
United States . . . .	380	35	345	456	396	334
Argentina . . . . .	190	38	152	176	125	40
Australia . . . . .	195	60	135	188	125	37
U. S. S. R. . . . .	18	14	4	68	2	0
India . . . . .	0	0	0	0	0	0
Danubian countries .	14	8	6	81	15	0
North Africa . . . .	15	11	4	22	15	0
Afloat . . . . .	30	—	50	38	51	29
TOTAL . . .	1,282	(1) 302	980	1,363	959	565

(1) The total export of the first half-year of the season is in fact 322 million bushels but it has been reduced to 302 million, because a quantity of 20 million has gone to increase the quantities afloat.

An important change in the export surplus situation occurred during the first half of the season: total exports of all exporting countries in the six months from 1 August 1932 to 31 January 1933 were only 302 million bushels so that on 1 February 1933 there was an export surplus greater than that existing at the same date last year though the total surplus is less than that of the previous season, a situation that confirms our forecast in October of a probable increase of stocks during the present season.

#### REQUIREMENTS OF IMPORTING COUNTRIES.

According to the calculation of their wheat requirements made last October the European importing countries should take 440 million bushels. This very low forecast of European needs, which are perhaps the lowest on record for Europe, excepting the war years, was established by taking into account not only the good wheat crop in these countries and the abundant production of rye maize and potatoes but above all the general economic situation and the unprecedented hindrances to international trade.

Since October none of these factors has undergone any significant modification. The total wheat crop of the importing countries has remained after revision of the estimates almost equal or even slightly superior to that calculated in October. The volume of other crops has also been maintained, that of potatoes being even appreciably increased. The difficulties of international exchange have in no way been attenuated; on the contrary, regulations have been made stricter and more rigid. The milling quotas for home-grown wheat established in an increasing number of countries hinder the formation of stocks of foreign wheat, the absorption of which should be difficult and very slow.

In any case imports into Europe in the first six months of the season already show that absorption has been very small and in accordance with our estimate.

#### *Net Imports of Wheat into Europe.*

	(million bushels)					
	1927-28	1928-29	1929-30	1930-31	1931-32	1932-33
First six months . . . . .	324	316	275	314	291	210
Last six months . . . . .	326	334	239	301	320	...
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
ENTIRE SEASON . . . . .	650	650	514	615	611	(1) 440

(1) Forecast.

The following table gives for the various European countries the apparent consumption in 1931-32, the domestic production in 1932, the probable import requirements for 1932-33, the actual imports during the first six months of the season and the balance to be imported to meet their requirements from 1 February to 1 August 1933.

*European Wheat Import Requirements.*

Country	Apparent consumption in 1931-32	Production 1932	Forecast of total imports in 1932-33	Net import from August be imported 1932 to January 1933	Balance to from February to July 1933
Germany . . . . .	179	184	—	(1) 3	—
Austria . . . . .	25	13	11	6	5
Belgium and Luxemburg . .	60	16	40	20	20
Denmark . . . . .	27	11	15	7	8
Spain and Portugal . . . . .	162	202	—	—	—
Baltic States . . . . .	21	18	—	—	—
France . . . . .	343	331	18	21	—
United Kingdom . . . . .	298	14	242	110	132
Greece . . . . .	35	17	18	10	8
Italy . . . . .	278	276	18	4	14
Netherlands . . . . .	36	14	26	14	12
Poland . . . . .	80	49	—	—	—
Sweden and Norway . . . .	34	27	11	6	5
Switzerland . . . . .	25	4	22	10	12
Czechoslovakia . . . . .	66	54	15	3	12
Malta, etc . . . . .	5	0	4	2	2
	1,674	1,260	440	210	230

(1) Export

Since the apparent consumption of 1931-32 is amongst the largest of recent years it will be apparent that the forecast of requirements in 1932-33 has been calculated by taking into account the fact that the large production of certain countries will leave internal stocks larger than usual to be carried over into 1933-34. Such, for example, is the case in France, which, though it has imported large quantities of foreign wheats, finds itself obliged to finance a considerable carry-over of its own crop.

The forecast of 440 million bushels made in October for the probable requirements of Europe in the current season appears, therefore, to answer perfectly to the present position, we accordingly maintain it as it was.

As regards extra-European countries a slight decrease in their demand for wheat was forecast last October due principally to diminished purchasing-power resulting from the crisis and the general financial and commercial difficulties; only China, due to its poor crop, would, according to that forecast, be obliged to draw largely on external markets but the heaviest demand from that country would not appear to compensate for the decrease expected for the other principal importers. In fact, though shipments to China have been large up to now, those to the other countries have been much reduced. Total exports from all exporting countries arriving at their destinations in the first six months were 302 million bushels; imports registered in European countries attained 210 million bushels; about 90 million should therefore have gone to extra-European countries as against 120 million in the same period last year. Our October estimate placing the requirements of these countries at 190 million bushels seems therefore to be confirmed.

As a final result, the careful examination of the situation in the various consuming countries does not appear to bring any change in the estimate made last October, according to which the probable imports of this season should be 440 million bushels for the European countries and 190 for the extra-European countries, giving in all the figure of 630 millions.

#### WHEAT SUPPLIES AND REQUIREMENTS.

The statistical position of wheat this season, revised on the basis of all the information at present available may be summarized as follows.

World production in 1932, excluding that of the U. S. S. R., China and Turkey is almost the same as that in 1931 and is therefore a good average. Taking account, however, of the fact that the wheat crop has been small in the U. S. S. R., China and Turkey, world production in 1932 will be below that of 1931 and the average. The exporting countries have together had a much smaller crop than last year though the two exporting countries of the southern hemisphere have each had a large production. The importing countries and especially those of Europe have had an exceptionally large crop, the largest so far obtained. The diminution of the crop in the exporting countries is due exclusively to unfavourable weather, which reduced unit-yields, and is in no way due to reduction in areas harvested, these having on the contrary increased by 4 million acres. The growth of production in the importing countries has been due exclusively to improvement of unit-yields, areas cultivated having remained almost the same as in 1931.

Despite the large stocks existing at the beginning of the season, the world export surplus is 80 million bushels less than last season, due to the small crop in surplus-producing countries. According to the revision made on the basis of the information now available the surplus is 1,287 million bushels, scarcely 20 million bushels below the total calculated last October. The revision of the calculation of probable needs of importing countries involves no modification of the October forecast, according to which Europe would have required to import 440 million bushels and the extra-European countries 190 million, in all 630 million bushels. The trade figures of the first six months show in fact that total exports of wheat and wheat-flour from all countries were 302 million bushels against 400 million in the corresponding period of 1931-32. The severe contraction in import needs, confirmed by the movement of international trade in the first semester of the current season, is due not only to the large crops of food products in these countries but in large part to the general economic situation and the obstacles of all sorts to international exchanges.

Comparison between quantities exportable on the one hand and import needs on the other shows that exportable stocks will undergo in the present season a further and very appreciable increase. On 1 August 1932 they were 565 million bushels and on 1 August 1933 should have risen to 650 million. The burden of these stocks may be readily grasped from the fact that their total appreciably exceeds world import requirements for the whole of this season.

It can only be hoped that in a short time the general world economic situation will improve and international commerce recover its normal course so that the very heavy burden of stocks that depresses so severely the world wheat market may be reduced to normal dimensions.

#### PROSPECTS FOR THE COMING CROP.

As regards prospects for production in the coming season, the information at present available may be summarized as follows :

In Europe, where the area sown to winter wheat is a little larger than that of last year, weather conditions during February and the first few days of March were, on the whole, favourable. In general, the crops have wintered well ; thanks to the protection of the snow during the coldest spells, the damage caused by frost has been minimum. The appearance of crops toward 10 March was also promising. Spring sowings have begun only in a few countries.

In the U. S. S. R., according to the plan laid down by the Government, the increase in the area sown to spring wheat should, in large part, compensate for the reduction in sowings of winter wheat, so that the total area sown to wheat should this year be smaller by only about 500,000 acres than that of last year. During February the winter cereal crops were sufficiently protected by the snow and it seems that the damage suffered by the sowings during the winter were limited in extent.

In the United States it is estimated that a relatively large proportion of the area sown to wheat last autumn will not be harvested, chiefly due to drought damage in the important producing areas (Oklahoma, Western Kansas and Nebraska); crop condition in these regions is bad. Although the situation in most of the other regions is more favourable, the total winter wheat crop is forecast to be considerably smaller than the poor one of last year. As regards the spring sowings the farmers, according to an inquiry made by the Department of Agriculture, intend to make only small reductions in the areas to be sown.

In India the second estimate of the area sown to wheat shows a reduction in the crop a little larger even than indicated by the first estimate. Rainfall during the latter half of February improved the condition of standing crops, which was on the whole considered to be good towards the end of February.

In North Africa the increase in the area sown to wheat in Morocco does not compensate for the reductions that have been made in Algeria, Tunis and Egypt so that the total for these four countries is about half a million acres less than in 1932. The condition of the crops, which have benefited by the weather conditions in February, was generally good at the beginning of March.

G. CAPONE.

## CEREALS

*Austria* : In the first decade of February the weather was rather mild and the snow melted up to 2000 metres. At the beginning of the second decade, however, there was further snowfall here and there and temperatures were appreciably lowered. Toward the middle of the month heavier falls of snow and still lower temperatures were reported, particularly in the eastern districts.

In the first half of February in areas without snow-cover winter crops were able to sprout thanks to the mild weather. Later with the further considerable fall in temperature these crops were covered with snow so that no serious frost damage occurred save in the case of wheat in the Burgenland.

At the beginning of March condition of winter sowings was as follows: winter wheat 2.3 (against 2.3 on 1 February 1933 and 2.9 on 1 March 1932); winter rye 2.1 (2.1, 2.8) and winter barley 2.6 (2.4, 2.7).

*Belgium* : After a complete thaw and some rainy days, wintry conditions set in again toward the middle of February; a little snow fell.

The sowings have not been injured by the cold and their aspect is normal; the return of fine weather is awaited for the commencement of the spring sowings.

The area under winter spelt in 1932-33 is estimated at 34,600 acres against 33,800 last season and 41,000 on the average of the five seasons ending 1930-31. Percentages 102.3 and 82.5. The area of mixed grain was respectively 7,400 acres, 8,500 and 11,300 acres. Percentages 87.0 and 65.9.

*Bulgaria* : In February the snow-cover sufficed to protect winter cereals from frost. The frequent rains in the latter half of the month ensured plentiful moisture. Toward the end of the month sowing of spring cereals had not yet been begun.

*Irish Free State* . Preparations for spring sowings and first sowings of wheat were carried out in February under generally good conditions.

The weather was generally favourable save for a severe blizzard during the last few days of the month, which caused, however, no serious damage to crops, though roads were in many places rendered impassable by snow-drifts and communications were disorganized.

*France* . The period 10 February to 10 March was marked by alternately mild wet weather and intense cold with fairly sharp frosts, this alternate freezing and thawing and the predominance of mild, wet weather, which again set in during the third week of March, was not very favourable to cereals, especially in the West and Southwest. The wheat crop, however, still has, on the whole, a satisfactory aspect and no serious frost damage is reported; the condition of the oat crop however, is in some cases not altogether satisfactory.

A reduction in the use of fertilizers is reported in several regions.

Work for the spring sowings has in general proceeded under good conditions.

*Great Britain and Northern Ireland* : Despite the severe blizzard over the whole area toward the end of February, ploughing was at the end of the month well advanced thanks to the dry weather earlier in the month. Wheat was generally looking well until the blizzard came and it was regarded as unlikely that any lasting damage had been caused by the frost and snow; in Scotland crop condition was 95. Barley and oats were reported in England and Wales as healthy and progressing.

*Hungary* : During the three weeks from 18 February to 11 March the weather was characterized, particularly during the latter half of the period considered, by high temperatures and abundant precipitation (snow in February and rain in March).

The autumn sowings have wintered under good conditions and, at the end of the period considered, were growing well. Only isolated cases of damage by frost or insects were reported.

Owing to the changeableness of the weather up to about 10 March sowings of spring cereals were not begun except on some sandy lands.

*Italy* : Growth of wheat during the month was good to very good save in some restricted areas in the North and South ; cultivation was interrupted by the rains in the latter half of the month.

*Area sown to winter cereals.*

(Thousand acres)

COUNTRIES	WHEAT			RYE			BARLEY			OATS		
	% 1932/33			% 1932/33			% 1932/33			% 1932/33		
	1932/33	1931/	1926/	1932/33	1931/	1926/	1932/33	1931/	1926/	1932/33	1931/	1926/
		1932	1927		1932	1927		1932	1927		1932	1927
	= 100	1930/	to	= 100	1930/	to	= 100	1930/	to	= 100	1930/	to
		1931	1931		1931	1931		1931	1931		1931	1931
		= 100	= 100		= 100	= 100		= 100	= 100		= 100	= 100
Germany . . .	4,947	101.3	123.2	10,991	101.5	97.7	618	101.7	129.6	—	—	—
Belgium . . .	366	95.5	90.0	551	98.0	97.6	79	101.2	109.2	—	—	—
Bulgaria . . .	2,911	95.2	104.2	493	96.4	96.0	457	99.0	97.6	—	—	—
Spain . . .	11,057	97.8	101.6	—	—	—	4,599	95.1	101.8	—	—	—
Finland . . .	34	106.0	127.2	560	103.0	104.1	—	—	—	—	—	—
France . . .	12,864	99.8	100.7	1,859	103.8	93.3	412	95.2	98.5	2,156	97.8	102.4
Greece . . .	1,679	112.2	125.5	170	94.1	119.5	558	97.3	116.0	332	90.4	113.2
Italy . . .	12,365	102.4	103.6	—	—	—	—	—	—	—	—	—
Latvia . . .	182	105.0	151.5	652	110.0	—	—	—	—	—	—	—
Lithuania . . .	389	92.6	125.6	1,182	99.7	101.3	—	—	—	—	—	—
Romania . . .	6,084	103.3	—	726	101.3	—	171	68.9	—	—	—	—
Czechoslovakia . . .	2,151	107.7	115.3	2,476	98.1	99.9	15	98.5	99.8	—	—	—
U. S. S. R. . .	28,058	86.8	126.9	63,007	97.8	98.0	711	81.6	70.5	—	—	—
Canada . . .	556	97.9	62.2	496	74.7	67.7	—	—	—	—	—	—
United States . . .	39,902	98.7	90.2	4,649	93.0	114.9	—	—	—	—	—	—
British India . . .	32,386	96.0	104.8	—	—	—	—	—	—	—	—	—
Syria & Lebanon . . .	938	78.7	79.3	—	—	—	664	83.6	80.6	—	—	—
Algeria . . .	3,645	98.4	98.0	3	56.6	78.5	3,188	97.2	92.9	519	102.9	87.7
Cyrenaica . . .	13	234.0	59.7	—	—	—	71	146.0	80.6	—	—	—
Egypt . . .	1,467	83.3	91.4	—	—	—	287	78.4	80.0	—	—	—
French Morocco . . .	2,817	115.0	104.5	—	—	—	3,410	116.4	113.4	64	101.2	77.4
Tunis . . .	1,606	76.5	89.1	—	—	—	791	53.3	66.0	69	80.0	66.6

1) Winter and spring crops.

*Latvia* : The average temperature of February was slightly below normal ; the minimum day temperature was  $-20^{\circ}\text{C}$ . Precipitation was also below normal. The snow-cover was not uniformly distributed, being very thin in some areas and about 30 cm. in others.

*Lithuania* : During February the cold was normal for the period of the year. Thanks to the protective snow cover, which was maintained during the whole of the month, the crops have wintered well.

Preparatory work for spring sowings has not yet begun.



*Portugal* : In the early part of March growth was checked owing to the intense cold frosts of February ; the lack of moisture caused some yellowing. The rains in the last days of February, however, considerably improved crop condition.

*Rumania* : At the beginning of February the snow-cover in general varied in depth from 20 to 50 cm. (in the North and in the Carpathian zone it reached, in places, 80-100 cm.).

During the first ten days of February the temperature rose and additional precipitation was recorded which, in the plains, fell as rain, dissolving the snow and giving rise to partial floods in the West of the country. The depth of the snow cover in the valleys of the Danube, Tisa, Siret and Prut was greatly diminished and, in places, the winter cereal sowings were exposed. On 11 and 12 February however, it again snowed and at mid-February, the sowings were again covered nearly everywhere.

During the latter half of February more precipitation was reported. As the temperature was not very low, the snow continued to melt in the plains. At the end of February, however, there was still a sufficiently thick layer of snow to protect the autumn sowings except in some districts of the Prut valley and the three western departments of the country.

At the beginning of March, the situation of winter crops was generally satisfactory. The soil had everywhere abundant moisture. The winter wheat crops, which were not well developed in autumn, grew well under the snow-cover and now appear strong and well tillered. Winter barley has also improved since the beginning of the winter. The crop condition of winter rye is satisfactory.

In the first half of March temperatures were appreciably higher and the snow melted almost completely throughout the plain.

Sowings wintered well not having suffered from frost, and toward the middle of March the soil was sufficiently saturated.

*Yugoslavia* : The first week of February was mild and rains caused partial melting of the snow, which still, however, remained as a protective cover for winter cereals. In the second week weather was warmer and the snow almost disappeared from the fields. Thanks, however, to the gradual thaw the soil is well saturated with moisture. In the latter half of the month colder weather returned and snow alternated with rain. The change in temperature caused serious anxiety for winter crops now fully exposed, their condition at the end of the month was, however, good.

*U. S. S. R.* : In February temperatures in many sections were below normal but, followings on the more or less abundant precipitation during the month, the snow-cover adequately protected sowings.

Preparations for spring sowings were made under favourable conditions. A recent Government order has assigned from the Government reserves, under the form of a loan, an advance of seed in the *sovkhozi* and *kolkhozi* of Ukraina and Northern Caucasus amounting to 7,331,000 centals in the former and 5,525,000 centals in the latter, in consequence of the fact that unfavourable weather last summer destroyed part of the cereal crop so that the *sovkhozi* and *kolkhozi* could not themselves provide the necessary seed.

According to an announcement of the People's Commissariat for Agriculture seed for spring cereals in the *kolkhozi* on 1 March was available for 87.6 %.

Sowings of spring wheat and barley were already begun on 10 February in Turkmenistan and in the first decade of March in other southern areas (Caucasus, Crimea, southern Ukraina).

*Argentina* : February weather generally favoured preparation of the soil. Humidity was sufficient save in some northern districts.

*United States* : On about 28 February winter cereals in the Southeast and the South Atlantic States were looking well and had made a good recovery from the effects of the recent freeze. In the Northeastern States condition was good with an adequate snow cover reported in parts. In the Ohio Valley winter wheat was rather irregular with the crop beginning to green locally, while in some other sections it was poor with some winter-killing. In Missouri and eastern Kansas condition was fair to very good but in western Kansas wheat was very poor to only poor. Condition remained largely unchanged in Oklahoma and only slow advance was made in Texas.

In the Pacific Northwest snow disappeared rapidly in the wheat section with some growers preparing to reseed a large acreage of winter-killed grain. Wind damage was again noted in many parts of the western belt.

Spring sowing and disking had begun northward to Missouri and Kansas with local work reported to the northward. Considerable oat seeding had been done in parts of Kansas, Missouri and Oklahoma, it was still too dry for ploughing in western Kansas.

In the week ended on 7 March the weather was mild except in the Eastern Gulf States. The aspect of the crop was unfavourable in several important winter wheat States.

According to a telegram of 22 March, the crop condition of winter cereals was good in the eastern and southern sections, appearance was unsatisfactory, however, in a large part of the great Plains.

The following statement was made by the United States Department of Agriculture of farmers' intentions to plant as on 1 March 1933. This statement is not a forecast of the acreage that will actually be planted, the latter will depend on weather conditions during the months to elapse before harvest, price changes, labour supply, etc.

*Intended plantings in 1933 in per cent of the acreage grown for harvest in 1932*

	Durum	Spring wheat Other	Total	Barley	Oats
% of area grown for harvest in 1932 . . . . .	77.2	102.0	97.5	98.2	97.0
Area harvested in 1932 (thous- and acres) . . . . .	3,863	17,658	21,521	13,213	41,224

*India* In the Punjab the weather in the first three weeks of February was mostly dry apart from scattered light showers. In the week ended on 27 February however, rain fell in all districts, the maximum being 80 mm (3.13 inches) at Amhala and the minimum 2 mm (0.01 inches) in the Multan district. The condition of standing crops was average to good on irrigated areas and under average to average on unirrigated. In the first ten days of February no rain fell in the United Provinces but in the following two weeks to the 25th rainfall was general. Some damage was done by rats, hail and frost in a few southern districts. Standing crops were improved by the rains. In the first half of February the weather in the Central Provinces was changeable with some showers in one or two districts. In the latter half of the month the weather was cloudy with more general rainfall and in the week ended on 27 February haustorns occurred, damaging crops at Jubbulpore.

According to a report for the whole of India sent by the Department of Commercial Intelligence and Statistics on 23 February climatic conditions of the wheat crop at sowing time were not generally favourable but the current condition of the crop, on the whole, was reported to be good. More rain was, however, badly wanted.

*Japan* : On 1 March the crop condition of wheat and barley was average. The weather conditions were favourable.

*Syria and Lebanon* : In Syria, the late and not very abundant rains followed by a fairly prolonged drought, very intense cold and frosts have caused extensive damage and in many parts of the country re-sowing has been necessary. In Lebanon, after a long drought, the January rains seem to have remedied the damage. In Latakia also, rains have improved the precarious situation as regards the sowings. In the Jebel Druze area only 26 mm. (1.02 inches) of rain were recorded in the period 1 October to 31 December 1932 and this explains the backwardness of the autumn sowings. Germination is everywhere backward and irregular.

*Algeria* : Cereal sowings have this year been relatively smaller than those of recent years ; there has, in fact, been sown 114,000 acres less than last year and 990,000 acres less than in 1930, in which year the cereal crop reached its maximum ; compared with the average for the period 1927-1931, the reduction amounts to 388,000 acres, or nearly 5 %. The cereal area is therefore, after the progressive increase recorded since 1927, about the same as in 1924, it is nevertheless still much larger than in the years immediately following the war, exceeding by over 990,000 acres or 16 %, the total area sown in 1921. The only cereal which shows a reduction compared with the latter year is oats whereas the larger area of soft wheat is maintained, having now reached 803,000 acres, an area not much smaller than that of last year and 75,000 to 125,000 acres above the average of the preceding five years.

During February and the beginning of March, the general conditions favoured the growth of the sowings. Precipitation in the latter half of February partly made up for the previous deficit so that, except in some western areas, the reserve of moisture in the soil seemed to be sufficient ; at the end of the month drier and clearer weather set in after the frosts that had somewhat damaged the fields, which were too advanced in growth. The growth of the sowings is in general good and more advanced than usual, arousing some fears of damage from late frosts or early scirocco. At the moment the condition of sowings is satisfactory and judged at the beginning of March to be average or 100 for each cereal compared with 120 on 1 March of last year.

*Cyrenaica* : For this year also a very poor cereal crop is forecast in the whole of the western slope of the colony, where most of the sowings were effected. In February and March there was an almost entire lack of rain. On the eastern slope the rain was much more abundant and a good crop may be anticipated. Crop condition on 1 March for wheat, barley and oats was 50 by the Institute's system.

*Egypt* : Wheat has a better appearance than last month but not so good as last year. Early crops and some ordinary crops have already eared. Crop condition on 1 March was 100 as on 1 February 1933 and 1 March 1932. Ear formation of barley has been completed and in the province of Giurga early crops are approaching maturity ; crop condition on 1 March was 100 as on 1 February, against 102 on 1 March 1932.

*French Morocco* : Crop condition was on the whole satisfactory.

*Tunis* . The official data of sowings at the beginning of March confirm those of the preceding month and it would appear that there has been a considerable decrease in cereal cultivation, especially as regards barley ; for the three cereals as a whole the decrease appears to be 32.8 % on last year's area (1,203,000 acres), which marked

the maximum extension of cereal culture in Tunis. It is to be noted that, though for the other cereals the area sown this year is one of the smallest of postwar years, soft wheat area is still increasing and has attained with 222,000 acres an absolute maximum; last year 198,000 acres were sown, while the average for 1921-30 was under 148,000 acres (122,300 for 1921-25 and 168,500 for 1926-30).

The present season has been characterized by continued drought in autumn and the early part of winter throughout the whole of Tunis but particularly marked in the centre and south; it was, however, fortunately broken by rains in the north. The drought, which caused the severe reduction in sowings above indicated, also caused, especially in the centre and south, sowings to sprout badly. Condition of cereals at the beginning of March, good in the north but only average to poor or bad in the two other sections.

Owing to the unequal distribution of the three cereals in the various sections, crop condition is very different for the different crops: for wheat and oats 100, that is, average, for barley poor to fair, while at the same date last year it was 120, equivalent to good, for the three cereals

### MAIZE \*)

*Argentina*. The rains in the latter half of February generally favoured development but growth was very irregular

*United States*. According to a report of farmers' intentions to plant as on 1 March published by the Department of Agriculture, the area indicated to be sown this year to maize is 103,934,000 acres a 96.5 % of that actually harvested last year

*Union of South Africa* (Telegram of 10 March): Very serious damage consequent on lack of rain is reported

Drought prevailed practically throughout the Union in January and the first half of February, the damage during the latter month particularly being irreparable. According to the first estimate production will be the lowest since the disastrous season of 1925-26

In most parts of the Transvaal Highveld, the most important area of production, the severe heat and drought have destroyed all hope of a successful harvest in most districts. Stalkborer (*Busseola fusca*) has also caused damage. In the Springbok Flats area, however, one of the most important producing districts outside the "maize triangle", the drought was definitely broken and ploughing and planting was energetically pursued in January despite the lateness of the season.

### . RICE

*United States*: According to a report of farmers' intentions to plant as on 1 March published by the Department of Agriculture, the area indicated to be sown to rice this year is 753,000 acres or 13.3 % less than that harvested last year.

*Formosa*: Growth of first crop rice in the northern section has been on an average scale. Weather was cold. Growth in the central and southern sections was fairly good.

*India*: According to the fifth and final forecast of the rice crop, published in February, the area likely to mature (i. e., area sown less area destroyed) in Lower

\*) See table on page 160.

## Maize.

COUNTRIES	AREA					PRODUCTION							
	1932	1931	Average 1926 to 1930	% 1932 — 1932/33		1932	1931	Average 1926 to 1930	1932	1931	Average 1926 to 1930	% 1932 — 1932/33	
	—	—	—	—	—	—	—	—	—	—	—	—	—
	1932/33	1931/32	1926/27 to 1930/31	1931/32	Average 1931/32 = 100	1932/33	1931/32	1926/27 to 1930/31	1932/33	1931/32	1926/27 to 1930/31	1931/32	Average 1931/32 = 100
	1,000 acres					1,000 centals			1,000 bushels of 56 lbs				
Austria . .	148	152	145	97.2	102.4	2,690	2,794	2,508	4,803	4,990	4,479	96.3	107.2
Bulgaria . .	1,829	1,682	1,693	108.8	108.0	23,246	19,594	15,239	41,511	34,989	27,212	118.6	152.5
Spain . . .	1,102	1,053	1,044	104.7	105.6	15,280	14,778	13,215	27,286	26,389	23,598	103.4	115.6
France . . .	813	855	843	95.0	96.5	10,037	13,789	9,695	17,924	24,623	17,312	72.8	103.5
Greece . . .	587	618	513	95.0	114.5	4,127	3,499	3,597	7,370	6,248	6,423	118.0	114.7
Hungary . .	2,877	2,720	2,652	105.8	108.5	53,701	33,459	35,897	95,894	59,749	64,102	160.5	149.6
Italy 1) 2)	3,259	3,206	3,515	101.7	92.7	61,906	40,354	52,449	110,546	72,061	93,659	153.4	118.0
Poland . . .	322	244	225	132.2	143.1	4,569	2,553	2,167	8,159	4,559	3,870	179.0	210.8
Portugal . .	240	243	222	98.7	108.2	...	2,296	1,968	...	4,099	3,515	...	...
Rumania . .	...	939	861	...	...	8,947	9,824	8,217	15,976	17,543	14,673	91.1	108.9
Switzerland .	11,775	11,749	10,851	100.2	108.5	119,711	133,674	101,569	213,771	238,704	181,374	89.6	117.9
Czechoslovakia	2	3	3	97.1	75.9	60	64	77	106	114	138	93.1	77.1
Yugoslavia .	331	344	347	96.2	95.6	6,819	5,020	5,272	12,176	8,965	9,415	135.8	129.3
U. S. S. R. .	6,442	6,168	5,734	104.4	112.4	99,646	70,623	65,918	177,940	126,113	117,711	141.1	151.2
Canada . . .	9,084	9,741	8,483	93.3	107.1	...	...	69,622	...	...	124,325	...	...
United States	130	132	159	98.7	81.9	2,832	3,051	3,172	5,057	5,449	5,665	92.8	89.3
Mexico . . .	107,729	105,301	99,456	102.3	108.3	1,628,505	1,437,691	1,441,278	2,908,045	2,567,306	2,573,710	113.3	113.0
Syria and Leb.	7,945	8,346	7,692	95.2	103.3	42,816	47,150	40,990	76,458	81,196	73,196	90.8	104.5
Turkey . . .	44	65	120	68.0	37.0	403	730	1,352	719	1,303	2,415	55.2	29.8
Algeria . . .	830	903	772	91.9	107.5	8,267	11,423	8,678	14,762	20,398	15,497	72.4	95.3
Egypt . . .	16	24	24	69.7	68.6	101	133	144	181	238	257	76.2	70.4
Eritrea . . .	2,043	2,194	2,066	93.1	98.9	42,593	43,793	42,604	76,060	78,202	75,079	97.3	100.0
Kenya 3)	7	22	16	33.3	47.6	66	240	97	118	429	174	27.5	67.9
It. Somalil.	166	161	199	103.7	83.7	2,794	1,525	2,804	4,989	2,724	5,008	183.2	99.6
Tunis 4)	24	53	39	45.1	61.0	213	521	417	380	931	745	40.8	51.0
Argentina 1) 2)	44	45	41	99.0	108.2	121	110	109	217	197	194	110.0	111.3
Union of South Africa	14,332	14,468	12,180	99.1	117.7	...	159,505	176,194	...	284,831	314,634	...	...
TOTALS . .	155,426	153,005	144,423	101.6	107.6	2,162,218	1,934,460	1,895,276	3,861,105	3,454,399	3,384,426	111.8	114.1

\* Countries not included in the totals. — 1) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production but not those of area are available. — a) Area sown. — b) Area harvested. — c) Area to be harvested. — s) Spring crop (mayengo). — t) Summer crop (cinquantino). — 1) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 2) Average 1927-30. — 3) European crop. — 4) Maize and sorghum.

Burma, from which practically all the export is derived, was 9,622,400 acres, again an increase on the area previously forecast, an increase of 2.6 % on the corresponding estimate of last year and one of 2.2 % on the actual area matured in 1931-32.

In the Delta proper condition figures showed a fall of one to three points, except in Myaungmya where condition was unchanged and in Maubin, where it had risen one point. In the Upper Delta condition figures had risen one to three points except in Tharrawaddy, where the figure was unchanged. The Tenasserim districts all showed a fall in condition.

Production of milled rice in Burma was estimated in February at 10,994 million pounds, an increase of approximately 17 % on the low figure of 1931-32. Owing prob-

ably to shortage of rain in August and damage by insects in some districts, the crop threshed out lighter than was expected. The surplus available for export in 1933 was estimated at 7,728 million pounds milled rice and rice products (6,962 million pounds milled rice) against 6,048 (5,450) million pounds in 1932, a reduction of 21.7 %.

### Rice.

COUNTRIES	AREA					PRODUCTION							
	1932/33	1931/32	Average 1926/27 to 1930/31	% 1932/33		1932/33	1931/32	Average 1926/27 to 1930/31	1932/33	1931/32	Average 1926/27 to 1930/31	% 1932/33	
				1931/ 1932	Aver- age							1931/ 1932	Aver- age
1,000 acres			= 100	= 100	1,000 centals			1,000 bushels of 45 lb.			= 100	= 100	
Bulgaria	13	17	18	77.8	72.8	304	307	350	675	683	777	98.8	86.8
Spain	123	113	121	108.6	101.7	7,016	5,869	6,782	15,591	13,042	15,071	119.5	103.4
Italy 1)	335	359	350	93.2	95.6	14,476	14,598	14,689	32,169	32,440	32,642	99.2	98.6
United States	869	978	963	88.9	90.3	17,710	20,705	19,458	39,356	46,012	43,240	85.5	91.0
Korea	3,824	4,104	3,922	93.2	97.5	64,297	63,283	62,987	142,879	140,625	139,967	101.6	102.1
Formosa a)	700	678	628	103.3	111.5	16,731	14,466	12,455	37,180	32,146	27,678	115.7	134.3
Formosa b)	...	888	815	—	—	19,229	15,355	14,464	42,731	34,121	32,143	125.2	132.9
India	82,026	84,260	80,839	97.3	101.5	1,057,478	1,137,958	1,058,099	2,349,905	2,528,744	2,351,285	92.9	99.9
Indo China.													
Annam c)	981	877	1,085	111.8	90.3	7,716	5,472	9,186	17,147	12,160	20,413	141.0	84.0
Annam d)	1,409	1,411	1,464	99.8	96.2	14,771	10,737	12,408	32,824	23,859	27,573	137.6	119.0
Cochin-China	5,066	4,932	5,161	102.7	98.1	48,502	49,839	46,998	107,780	110,750	104,439	97.3	103.2
Laos	1,137	1,161	1,118	97.9	101.7	7,606	7,275	7,716	16,902	16,167	17,147	104.5	98.6
Tonkin month)	1,181	1,184	1,293	99.8	91.4	13,089	13,147	15,882	29,086	29,215	35,292	99.6	82.4
Japan	7,983	7,962	7,829	100.3	102.0	240,764	220,133	242,738	535,020	489,174	539,406	109.4	99.2
Java and e)	8,053	7,596	7,496	106.0	107.4	109,807	107,188	106,961	244,011	238,192	237,687	102.4	102.7
Madura f)	1,052	1,086	1,127	96.9	93.3	9,099	8,796	9,601	20,220	19,547	21,336	103.4	94.8
Turquie	53	50 2)	43	107.3	122.8	1,025	827 2)	516	2,277	1,839 2)	1,146	123.8	198.7
Egypt	489	67	325	725.5	150.6	12,125	1,585	8,970	26,945	3,522	19,933	765.1	135.2
TOTALS.	116,187	117,723	114,597	98.7	101.4	1,661,745	1,697,540	1,650,260	3,692,698	3,772,238	3,667,175	97.9	100.7

§) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimate of production but not those of area are available. — a) First crop — b) Second crop. — c) First semester. — d) Second semester — e) Irrigated rice. — f) Unirrigated rice. — i) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 2) Average 1927-30

According to the February estimate the production of India, excluding Burma, for 1932-33 has been 57,673 million pounds, a decrease of 16.6 %.

In Bengal the area under winter rice showed a very slight increase; production figures are not, however, strictly comparable with those of 1931-32 in this case owing to the adoption of a new method of estimation. Weather was generally favourable for harvesting except in some districts in the north where heavy rain in December was reported to have caused some damage. Total production of winter rice has been calculated on the assumption of a yield 90 % of the normal. Production of autumn, winter and summer rice together is estimated at 20,881 million pounds.

In Bihar and Orissa, which normally comes second to Bengal amongst the provinces of India proper as a rice-producer, production of winter rice is 28.0 % less than in 1931-32; added to a decrease of 5.3 % in area sown was a highly deleterious shortage of rain in October, which was not compensated for by the showers in the following month. Har-

vesting proceeded smoothly. The total of autumn, winter and summer crops is estimated at 9,410 million pounds, a decrease of 26.8 % on the corresponding figure of 1931-32.

In Madras there was a slight increase in area sown. The harvest of the main crop was in progress in February except in the Circars and yield was expected to be normal or slightly below normal according to district. The crop was reported to have been attacked in West Godavari by insect pests. Production was estimated at 11,731 million pounds, a decrease of 2.7 %.

In the United Provinces the decrease in production, by 33.5 %, due mainly to drought, has been even greater than that in Bihar and Orissa. Only Assam amongst the Provinces of India proper shows an increase in production, due to generally favourable weather.

*British Malaya* : Though in most parts of the peninsula January is generally only moderately wet with a rainfall below that of December, the abnormally dry December this season resulted in many localities in January rainfall being above that of the previous month while remaining approximately average for most of the country ; in the east of Pahang and on part of the Perak-Selangor coast the rainfall was above average.

In January harvesting was general in Kedah, Province Wellesley, and in parts of Negri Sembilan, Malacca and Johore and at the end of the month was completed in parts of Selangor, Negri Sembilan, Malacca and Pahang. The crop was reported to be generally good throughout the country. In Krian harvesting commenced sporadically but was not expected to be everywhere completed until the beginning of April : given such a late harvest prospects were very doubtful. In some localities in Province Wellesley and Perak high winds accompanied by heavy showers caused lodging.

The increase in area in Pahang has taken place in only two of the western districts and not four as previously reported.

*Siam* : The area reported up to the end of December as planted to rice in sixty provinces was 7,475,000 acres against 7,214,000 in 1931, an increase of 261,000 acres or 3.6 %. The area damaged up to the end of December was 301,000 acres against 730,000 acres up to the same date in 1931, a decrease of 58.8 %. The area harvested up to the end of December was 943,000 acres against 890,000 at the end of December 1931, an increase of 6.0 %, and production of rough rice was 1,140 million pounds against 989 million, an increase of 15.2 %.

A trade estimate now places the export surplus at over 3,500 million pounds of rice.

## POTATOES

*France* : The persistence of rainy, mild weather in the West caused fears of delay in the planting of early potatoes.

It is confirmed that stocks are large and little affected by frost, and much too considerable to be absorbed by human consumption and that a large part will have to be used for starch manufacture and stock-feeding.

*Italy* : Planting of potatoes began as usual in February.

*Portugal* : Planting took place in February. It was not expected that the area would attain that of last year, due to the high price of both home and imported seed potatoes.

*Argentina* : Toward the middle of February lifting was begun in the principal areas of production yields of potatoes were generally satisfactory.

*United States* : In the week ended on 28 February potato planting was begun on the eastern shore and in extreme southeastern Virginia.

According to a report of farmers' intentions to plant as on 1 March published by the Department of Agriculture, the area indicated to be planted to potatoes this year is 3,185,000 acres or 5.4 % less than that actually harvested in 1932.

## SUGAR

In view of the present critical situation of the sugar industry it is particularly interesting to know the area which will be sown to sugar-beet in Europe during the coming season 1933-34.

Up to the present moment there is no information available for all of the countries, on the one hand because in many countries sowings are not yet commenced and, on the other, because in some countries the producers and sugar manufacturers are still discussing the quantities to be delivered at the factories and the prices of the beet. It is consequently necessary to restrict oneself to the consideration of the countries for which more precise information is available.

In Germany the production of sugar-beet during this season has been more than 35 % below consumption. The deficit has been largely filled from stocks, which at the beginning of the season were estimated at over 16,100,000 centals (800,000 short tons) but for the coming season, in order to cover consumption and the export quota, which will probably be fixed at 2,200,000 centals (110,000 short tons) by international agreement, an increase in beet production will be required and is considered by some to be very important. The magnitude of the increase depends, however, principally on the export quota.

For Austria an increase in area is anticipated as the sugar-beet crop, despite the fall in prices, is still remunerative and also because production has not yet reached the level of home consumption. In Finland an increase of 12 % in the beet area is reported compared with that of 1932.

In Great Britain, there will probably be an increase as the manufacturers are interested in profiting from the subsidy which, according to the British Sugar Act of 1925, should terminate in the 1933-34 season. The construction of two more factories is under consideration.

In Hungary the conversations between factories and growers have resulted in the decision to maintain for the current year almost the same conditions as last year. There is an increase of about 7 % in beet contracts and an equivalent increase in area may be expected.



In Latvia, due to the very marked and continual development which began with the creation of the sugar industry, an extension of the beet crop by 50 % is anticipated. A new sugar factory is under construction.

In Rumania the area is expected to be almost doubled.

In Sweden both Houses have approved the prolongation by one year of the monopoly of sugar imports, on condition that the price to be paid to farmers for sugar-beet shall not be below 2 25 crowns per quintal. A considerable extension of the beet crop is forecast especially as consumption still exceeds production.

The Swiss Peasants' Secretariat communicates that in Switzerland the increase in the area sown this year to sugar-beet will be about 15 % compared with last year.

As regards Turkey also, it is known that the sugar beet crop will be larger than last year. It is intended to construct a new sugar factory.

According to more reliable information there will be sown to sugar beet in Belgium an area nearly equal to that of last year; in Denmark also there will be no notable variations. The same may be said of Ireland.

As regards Czechoslovakia, the first estimates of area sown will not be available until the end of May; according to information published by the Central Association of the Sugar Industry in Czechoslovakia, it may be said at the present moment, on the basis of the discussions which have taken place between the producers and the sugar manufacturers, that the areas planted to beet during the year do not differ from those of last year.

For Poland, according to information supplied by the Higher Council of the Sugar Industry a diminution of 10-15 % in sugar beet cultivation is to be expected this year.

For Spain, it is very probable that this year there will be a reduction of the area sown to sugar beet. In Italy, an agreement has been made between the beet producers and the sugar manufacturers, according to which the former undertake to deliver 44,310,000 centals (2,216,000 short tons) of beet. Compared with last year, the deliveries of beet should decrease by about 14 %.

According to the plan of re-organisation formulated two years ago in France, there should be produced during the season 1933-34, 530,000 centals (26,500 short tons) of refined sugar less than the quantities fixed by the same plan for the season 1932-33.

Account must, however, be taken of the fact that the result of the season 1932-33 have not conformed to the figures fixed by the plan.

As regards the U. S. S. R., the area to be sown in 1933 to sugar-beet has been fixed at about 25 % less than that of 1932. This decrease should not however result in a corresponding decrease of production because the Government has the intention of seriously improving the methods of cultivation so as to raise the yield per acre which has until now been rather low and very markedly so in 1932.

For the other European and extra-European countries, not enough information is yet available to permit a total world estimate to be made.

E. R.

*Production of Beet-sugar (raw).*

COUNTRIES	PRODUCTION 1 SEPT. - 28 FEB.		TOTAL PRODUCTION DURING THE SEASON				
	1932-33	1931-32	1932-33 1)	1931-32	Average 1926-27 to 1930-31	% 1932-33	
						1931-32 = 100	Average = 100
	thousand cents	thousand cents	thousand cents	thousand cents			
Germany . . . . .	23,444	34,533	23,869	35,160	42,889	68	56
Austria . . . . .	3,636	3,585	3,638	3,585	2,506	101	145
Belgium . . . . .	—	—	5,467	4,422	5,733	124	95
Bulgaria . . . . .	—	—	590	563	843	105	70
Denmark . . . . .	—	—	4,228	2,691	3,243	157	130
Spain . . . . .	—	—	4,805	7,954	4,988	60	96
Irish Free State . . . . .	—	—	574	125	442	459	130
Finland . . . . .	—	—	127	83	76	153	167
France . . . . .	3) 21,913	3) 18,753	21,913	18,927	20,299	116	108
Great Britain . . . . .	7,948	6,022	7,946	6,022	5,718	132	139
Hungary . . . . .	—	—	2,315	2,761	4,685	84	49
Italy . . . . .	—	—	7,123	8,363	8,218	85	87
Latvia . . . . .	—	—	573	265	83	217	693
Netherlands . . . . .	2) 5,060	2) 3,634	5,060	3,634	6,162	139	82
Poland . . . . .	2) 9,191	2) 10,874	9,193	10,880	15,911	84	58
Rumania . . . . .	—	—	1,455	1,138	3,013	128	48
Sweden . . . . .	—	—	4,530	3,166	2,728	146	170
Switzerland . . . . .	—	—	139	134	148	103	93
Czechoslovakia . . . . .	13,818	17,742	13,891	17,956	24,384	77	57
Turkey in Europe . . . . .	—	—	408	311	93	131	439
Yugoslavia . . . . .	—	—	1,921	1,903	2,272	101	84
<i>Total Europe a) . . . .</i>	—	—	119,867	130,043	154,434	92	78
U. S. S. R. . . . .	—	—	22,046	33,625	26,723	66	82
<i>Total Europe b) . . . .</i>	—	—	141,913	163,668	181,157	87	78
Canada . . . . .	—	—	1,050	1,071	818	98	128
United States . . . . .	—	—	28,129	24,860	22,697	113	124
<i>Total North America . . . .</i>	—	—	29,179	25,931	23,515	113	124
Japan . . . . .	—	—	582	592	517	98	113
Turkey in Asia . . . . .	—	—	251	191	46	131	545
<i>Total Asia . . . .</i>	—	—	833	783	563	106	148
Australia . . . . .	—	—	122	118	64	103	191
GENERAL TOTALS ( a) . . . .	—	—	150,001	156,875	178,576	96	84
( b) . . . .	—	—	172,047	190,500	205,299	90	84

a) Not including the U. S. S. R. — b) Including the U. S. S. R. — 1) Approximate data. — 2) To the end of January.  
— 3) To 15 February. — 4) Average 1927-28 to 1930-31.

\* \* \*

*Italy* : Sowings of sugar-beet began in February.

*Antigua, British West Indies* : Cutting began satisfactorily. Yields of cane were good. The factory has increased its capacity.

*Barbados* : The abundant rains of December and January made a large crop probable.

*Guadeloupe* : The prolongation of the last crop and the torrential rains have caused delay in new plantings.

*St. Lucia* : Harvesting was expected to begin early in February. Planting of the new crop was well advanced in January, weather having been favourable.

*Production of Cane-sugar.*

COUNTRIES	1932-33 (1)	1931-32	Average 1926-27 to 1930-31	1932-33 (1)	1931-32	Average 1926-27 to 1930-31	Percentages for 1932-33	
	Thousand centals			Short tons			1931-32 = 100	Average = 100
<b>AMERICA.</b>								
Argentina . . . . .	7,665	7,623	8,758	383,253	381,120	437,919	101	87
Brazil . . . . .	21,385	21,826	19,586	1,070,000	1,090,000	979,281	98	109
Cuba . . . . .	44,093	58,270	96,318	2,000,000	2,913,441	4,815,835	76	46
Ecuador . . . . .	265	504	442	13,000	25,000	22,084	52	60
United States (L.) . .	4,019	3,139	2,536	200,900	157,000	126,798	128	158
Guadeloupe . . . . .	551	507	519	28,000	25,000	25,949	109	106
British Guiana . . . .	3,024	3,329	2,696	151,200	166,469	134,774	91	112
Jamaica . . . . .	1,344	1,417	1,333	67,000	70,840	66,646	95	101
Mexico . . . . .	4,718	5,161	4,433	236,000	258,000	221,655	91	106
Paraguay . . . . .	154	185	118	7,700	9,260	5,920	83	130
Peru . . . . .	8,819	8,868	8,690	400,000	443,400	434,506	99	101
Puerto Rico . . . . .	16,326	19,849	14,439	816,295	992,423	721,935	82	113
Dominican Republic . .	9,414	9,579	7,749	471,000	478,931	387,455	98	121
<i>Total America . . .</i>	<i>121,777</i>	<i>140,257</i>	<i>167,617</i>	<i>5,844,348</i>	<i>7,010,884</i>	<i>8,380,757</i>	<i>87</i>	<i>73</i>
<b>ASIA.</b>								
Formosa . . . . .	15,452	21,805	14,940	772,586	1,090,249	746,981	71	103
India . . . . .	92,991	86,913	67,769	4,650,000	4,345,600	3,388,414	107	137
Japan . . . . .	1,764	2,072	1,932	88,000	103,586	96,620	85	91
Java . . . . .	29,322	57,320	59,818	1,466,000	2,900,000	2,990,857	51	49
Philippine Is. . . . .	23,590	20,944	17,906	1,180,000	1,050,000	895,282	113	132
<i>Total Asia . . . . .</i>	<i>163,119</i>	<i>189,054</i>	<i>162,365</i>	<i>8,156,586</i>	<i>9,489,435</i>	<i>8,118,154</i>	<i>86</i>	<i>100</i>
<b>AFRICA</b>								
Egypt . . . . .	2,800	3,249	2,209	140,000	162,472	110,463	86	127
Mauritius . . . . .	5,379	3,616	4,952	269,000	180,806	247,577	149	109
Reunion . . . . .	1,197	946	1,073	59,868	47,312	53,643	126	112
Union of South Africa .	7,178	6,518	5,910	358,905	325,900	295,498	110	121
<i>Total Africa . . .</i>	<i>16,554</i>	<i>14,329</i>	<i>14,144</i>	<i>827,773</i>	<i>716,490</i>	<i>707,181</i>	<i>116</i>	<i>117</i>
<b>OCEANIA</b>								
Australia . . . . .	12,119	13,148	11,365	605,900	657,400	568,236	92	107
Hawaii . . . . .	19,680	19,960	18,113	984,000	998,000	905,655	99	109
Fiji Is. . . . .	3,069	1,786	1,967	153,400	89,300	98,325	172	156
<i>Total Oceania . . .</i>	<i>34,868</i>	<i>34,894</i>	<i>31,445</i>	<i>1,743,300</i>	<i>1,744,700</i>	<i>1,572,216</i>	<i>100</i>	<i>111</i>
<b>GENERAL TOTALS . .</b>	<b>336,318</b>	<b>378,534</b>	<b>375,571</b>	<b>16,572,007</b>	<b>18,961,509</b>	<b>19,778,308</b>	<b>89</b>	<b>90</b>

1) Approximate data.

*Trinidad* : Light showers continued to fall in the early part of February, interfering with harvesting; sucrose content of standover canes showed a slight improvement. The crop as a whole was expected to be as large as that of last year.

*Formosa* : Growing conditions on 1 March of the cane planted last summer were average; those of the cane under cutting were fairly good. Harvesting is progressing under average conditions.

According to the most recent estimate production of sugarcane in 1932-33 is about 112,240,000 centals (5,612,000 short tons) against 166,746,000 (8,337,000) in 1931-32 and 124,490,000 (6,224,000) on the average of the five seasons ending 1930-31. Percentages 67.3 % and 90.2 %.

*India* : In the Punjab the weather during February was dry until the week ended on the 27th, when general rains fell, the maximum being 80 mm. (3.13 inches) at Ambala and the minimum 2 mm. (0.1 inch) in the Multan district. In the United Provinces no rain fell in the first half of February and irrigation continued. Rainfall was general after the middle of the month and preparation of the land for sowing sugarcane continued. Grinding progressed. Some damage was caused in places by rats, hail and frost. Light to moderate rains fell in Bihar and Orissa ; crop condition at the end of the month was good.

According to a report for the whole of India sent by the Department of Commercial Intelligence and Statistics on 23 February the condition of the cane crop was reported to be good.

*Java and Madura* : The area cultivated by natives to sugarcane in 1931-32 is 27,600 acres against 29,300 in 1930-31 and 36,800 on the average of the five seasons ending 1929-30. Percentages 94.3 % and 75.2 %.

*Philippines* : According to the United States Department of Commerce, continued rains and moderately unfavourable juice purities in sugar-cane have caused a revision downward in forecasts of the 1932-33 sugar crop.

*Egypt* : Cutting of cane and grinding is proceeding. Preparations for the next season are far advanced and some areas were planted in the latter part of February. Crop condition on 1 March was 103 as on 1 February 1933 and 1 March 1932.

*Union of South Africa* : Crop condition at the end of January was 7 % below normal. Weather in Zululand was suitable for cane growth but on the north and south coasts of Natal was dry for the time of year, more rain being needed.

## VINES

### The world wine situation.

The data at present available permit an outline to be obtained of the general characteristics of the present season. As, however, such a study cannot be made except in relation to the trade movement of previous seasons and particularly to that of 1931-32, a preliminary examination of the latter is necessary. After having determined the statistical situation regarding the wine trade, it will be possible to use this as a basis for a judgement of the present market situation and crisis.

### STATISTICAL EXAMINATION OF THE SEASON 1931-32.

The 1931-32 season was marked by a general contraction of trade, with only rare exceptions of very small magnitude. A net decrease in consumption occurred in most countries except France, where it remained normal and some countries of minor importance such as Czechoslovakia. This decrease in consumption, difficult to estimate in the large producing countries such as Italy,

Spain and the Danubian countries, is clearly revealed by the import statistics of the non-producing countries or countries not producing sufficient to satisfy home consumption.

TABLE I. — *Imports of wine into the principal importing countries by wine seasons.*  
(Season 1 October–30 September).

COUNTRIES	1931-32	1930-31	1929-30	1928-29	1927-28	1926-27
(ooo Imperial Gallons)						
France						
from Algeria and Tunis . . . . .	(259,307)	(269,294)	(238,079)	(223,803)	(160,032)	(165,070)
from foreign countries . . . . .	19,974	94,457	33,392	63,947	90,058	62,803
Switzerland . . . . .	25,517	25,759	24,835	27,673	26,837	27,541
Germany . . . . .	14,254	14,342	17,224	24,043	26,727	26,199
United Kingdom :						
from British countries . . . . .	3,256	3,168	2,838	2,706	2,442	2,332
from foreign countries . . . . .	8,711	10,933	11,373	11,637	11,109	15,486
Belgium . . . . .	6,291	8,337	9,195	9,635	8,975	10,603
Austria . . . . .	4,729	6,907	9,041	9,129	11,395	7,963
Czechoslovakia . . . . .	2,574	4,180	6,027	6,401	6,995	5,499
Netherlands . . . . .	2,332	2,728	3,102	3,256	3,168	3,300
Secondary European importing countries (Sweden, Denmark, Norway, Poland) . . . . .	3,366	4,224	4,553	4,421	4,224	4,356
French Morocco . . . . .	4,114	3,894	5,477	4,597	3,982	5,521
Egypt . . . . .	2,156	2,508	3,806	4,092	3,564	3,454
Total { Excluding imports into France . . . . .	77,300	86,980	97,471	107,590	109,418	112,254
{ Including imports into France except from Algeria and Tunis . . . . .	97,274	181,437	130,863	171,537	199,476	175,057
(ooo American Gallons)						
France						
from Algeria and Tunis . . . . .	(311,405)	(323,398)	(285,912)	(268,767)	(192,184)	(198,234)
from foreign countries . . . . .	23,987	113,435	40,101	76,794	108,152	75,421
Switzerland . . . . .	30,644	30,934	29,825	33,233	32,229	33,074
Germany . . . . .	17,118	17,224	20,685	28,874	32,097	31,463
United Kingdom :						
from British countries . . . . .	3,910	3,804	3,408	3,249	2,932	2,800
from foreign countries . . . . .	10,461	13,129	13,658	13,975	13,341	18,598
Belgium . . . . .	7,555	10,012	11,042	11,571	10,778	12,733
Austria . . . . .	5,680	8,295	10,857	10,963	13,684	9,563
Czechoslovakia . . . . .	3,091	5,019	7,238	7,687	8,401	6,604
Netherlands . . . . .	2,800	3,276	3,725	3,910	3,804	3,963
Secondary European importing countries (Sweden, Denmark, Norway, Poland) . . . . .	4,042	5,072	5,468	5,310	5,072	5,231
French Morocco . . . . .	4,940	4,676	6,578	5,521	4,781	6,631
Egypt . . . . .	2,589	3,012	4,570	4,914	4,280	4,147
Total { Excluding imports into France . . . . .	92,830	104,453	117,054	129,207	131,399	134,807
{ Including imports into France except from Algeria and Tunis . . . . .	116,817	217,888	157,155	206,001	239,551	210,228

In the table there have only been inserted the imports of the principal importing countries of the northern hemisphere; an examination of the movement of world net imports reveals a slightly larger contraction (1). Leaving aside

(1) Calculated fairly roughly by adding to the net imports during the season of the countries indicated in the table, the total net imports of the overseas countries during the year following the beginning of the season, the figures of world net imports, excluding the group France-Algeria-Tunis, are as follows: 1926-27: 134.2 million Imperial gallons (161.1 million American gallons); 1927-28: 133.5 (160.3); 1928-29: 130.9 (157.2); 1929-30: 114.2 (137.1); 1930-31: 99.2 (119.4); 1931-32: 89.1 (107.0). Including the group France-Algeria-Tunis: 1926-27: 162.1 (197.6); 1927-28: 167.4 (201.0); 1928-29: 161.8 (194.3); 1929-30: 119.3 (143.3); 1930-31: 172.5 (207.1); 1931-32: 91.2 (109.6).

for the moment the importing group constituted by France, Algeria and Tunis, there is found to exist for the other countries together, a regular and very large contraction during the last three seasons ; reduced to about 90 million Imperial gallons (110 million American gallons), world net imports, excluding those of the group previously indicated are one-third below those of the previous three seasons 1926-27, 1927-28 and 1928-29. If to this quantity is added that of the net imports of the group France-Algeria-Tunis, the reduction appears to be still larger, reaching, in 1931-32, 45 % compared with the average of the first three seasons of the period.

The magnitude of this decrease in imports, due to a general decline in consumption, varies in the different countries according to their degree of sensibility to the economic crisis. To the observations to be drawn in this respect from an examination of the preceding table may be added the very large reduction which has taken place in the overseas countries which have reduced their imports by one third or one half according to whether the country is a producer or not (1).

To this general phenomenon has been added one of more localized character but not less important : the partial closing of the French market to foreign wines.

Imports into France until now depended essentially on two factors : firstly : the difference in cost price between foreign wines and home produced wines delivered at the centres of consumption, secondly, on the quality of the French-Algerian production rendering more or less necessary mixing with the more alcoholic wines of Spain, Greece and Italy ; the volume of the French-Algerian production had, on the contrary, little influence on imports.

Since 1930 a law forbidding the mixture of home-produced wines with those imported has eliminated the qualitative factor ; in 1932 the removal of customs duties lessened the influence of the price factor.

The two measures, however, had no effect during the season 1930-31 ; on the one hand, the quotas granted to the principal countries of supply at the tariff in force have greatly diminished the effect of the customs measure introduced ; moreover, the considerable difference between prices of French and those of foreign wines allows the latter, which often benefit in their own countries from transport facilities to counteract the higher import duties ; foreign wines thus enter directly into consumption and in 1931-32 there was imported over 33,000,000 (39,600,000) gallons above the quota admitted at the reduced rate.

The 1931-32 season was, on the other hand, dominated by new factors, which considerably restricted imports ; the so-called *blocage* law imposed immobilization in importers' cellars of a certain proportion of imported wines, the proportion increasing with the quantity introduced up to 70 % ; in addition, prices on the French market fell by nearly 50 % so that the import duty, though

(1) The net imports of the overseas producing and importing countries are as follows : 1927 : 8.2 million Imperial gallons (9.8 million American gallons) ; 1928 : 8.8 (11.2) ; 1929 : 6.8 (108.4) ; 1930 : 6.1 (7.4) ; 1931 : 2.3 (4.4) ; the net imports of the overseas non-producing importing countries : 1927 : 11.0 (13.3) ; 1928 : 11.4 (13.6) ; 1929 : 11.0 (13.2) ; 1930 : 8.9 (12.0) ; 1931 : 7.9 (9.5). There is every reason to believe that the decline continued in 1932.

reduced, was fully felt, at least as regards Italian wines, Spanish wines being still very inferior. These two facts, the *blocage* law and the fall in prices, resulted from the abundant Franco-Algerian crop so that the very sharp reduction in imports may itself be considered an indirect though neither immediate nor necessary consequence of the growth in Franco-Algerian production.

In any case the net import of the Franco-Algerian-Tunisian group, which may be accurately enough considered as a closed economic system, fell to 1,850,000 (2,220,000) gallons though it remained round about 33,000,000 (39,600,000) in the three seasons prior to 1929-30 — 30,401,000 (36,508,000) in 1926-27; 33,943,000 (40,761,000) in 1927-28 and 30,885,000 (37,089,000) in 1928-29 — and reached 51,365,000 (61,684,000) in 1930-31 after having fallen, however, to 5,125,000 (6,155,000) in 1929-30. Despite this severe contraction it must be noted that the quantity available for internal consumption during the 1931-32 season was 154,000,000 (185,000,000) gallons more than in 1926-27 and nearly 517,000,000 (621,000,000) more than in 1929-30 due to the large production of Algeria, equal to that of the 1928-29 season and 198,000,000 (238,000,000) gallons greater than the average of the five seasons ending 1929-30.

The partial closing of the French market affected almost exclusively the two great producers: Spain and Greece, as well as Italy, which in 1930-31 found an exceptional outlet in France. If this French factor has less influence than the decrease in world wine consumption, which affects all the exporting countries, its quantitative importance with respect to total world exports is still very great, as is apparent from the following table.

If the total net exports of individual countries are taken into account it will be seen that they have decreased fairly steadily; for countries of the northern hemisphere they have fallen from 197,100,000 (229,800,000) in 1926-1927 to 88,000,000 (106,000,000) in 1931-32. If the exports from Spain, Italy and Greece to France are subtracted the decrease is seen to have been smaller though quite distinct: 118,800,000 (142,640,000) in 1926-27 and 72,600,000 (87,200,000) in 1931-32.

Thus the quantity remaining for internal consumption is greater than normally left by a crop of moderate size; though only 52,800,000 (63,400,000) gallons more than in 1930 were produced there remain 143,000,000 (171,700,000) more and though production in 1931 was 125,400,000 (150,600,000) less than the average for the period 1925 to 1929 the quantity remaining for internal consumption is only 50,600,000 (60,750,000) less than the average remaining during the same quinquennium. The development of trade during the season permits the assumption *grosso modo* that, consequent on a certain decrease in internal consumption, the total of 1,474,000 (1,770,000) gallons left by a production distinctly below the average represents about the present capacity of absorption of the surplus-producing countries. The decrease in exports has therefore produced or accentuated the glut in these countries as a whole.

In Spain and Greece the difficulties of viticulture seem to be essentially due to this external factor, though to it must be added the effects of a decrease in consumption difficult to estimate. This assertion requires to be qualified for Portugal and Hungary and is no longer exact for Italy and Yugoslavia. The

TABLE II. — *Exports of wines from the principal exporting countries by wine seasons.*

COUNTRIES	1931-32	1930-31	1929-30	1928-29	1927-28	1926-27
(ooo Imperial gallons)						
(Season 1 October-30 September)						
NORTHERN HEMISPHERE						
Spain :						
destined to France 1) . . . . .	11,945	63,793	21,888	48,989	74,110	54,774
" " other countries . . . . .	28,179	30,995	44,281	46,833	45,007	52,024
Italy :						
destined to France . . . . .	616	20,546	1,188	550	418	1,980
" " other countries . . . . .	17,048	18,192	19,380	20,436	20,920	20,238
France . . . . .	16,344	19,182	25,781	30,423	30,071	31,654
Portugal . . . . .	14,056	18,544	14,826	20,678	19,072	22,789
Greece :						
destined to France 3) . . . . .	2,574	6,577	9,679	10,889	5,917	15,288
" " other countries 3) . . . . .	4,048	6,687	10,669	21,228	15,332	18,148
Hungary 4) . . . . .	4,641	7,193	6,731	5,455	1,848	1,628
Yugoslavia . . . . .	3,740	4,290	1,144	1,320	1,716	1,056
Germany . . . . .	1,012	1,144	1,122	880	880	748
Algeria-Tunis :						
destined to foreign countries . . . . .	1,782	1,914	2,486	2,640	4,070	2,948
" " France . . . . .	(279,413)	(297,539)	(234,714)	(224,947)	(159,812)	(175,870)
Total { Excluding exports destined to France . .	90,190	107,788	125,386	149,583	138,585	149,583
Including such exports except those of Algeria-Tunis destined to France . .	105,985	199,057	159,175	210,321	219,361	223,275
SOUTHERN HEMISPHERE						
(Season 1 July-30 June)						
Australia . . . . .	3,476	2,200	2,178	1,738	3,762	3,080
Union of South Africa . . . . .	880	770	616	462	...	..
(ooo American gallons)						
(Season 1 October-30 September)						
NORTHERN HEMISPHERE						
Spain :						
destined to France 1) . . . . .	14,344	76,610	26,285	58,831	88,999	65,779
" " other countries . . . . .	33,840	37,222	53,178	56,242	54,049	62,476
Italy :						
destined to France . . . . .	740	24,674	1,427	660	502	2,378
" " other countries . . . . .	20,473	21,847	23,273	24,541	25,123	24,304
France . . . . .	19,628	23,036	30,961	36,535	36,112	38,014
Portugal . . . . .	16,881	22,270	17,805	24,832	22,904	27,368
Greece :						
destined to France 3) . . . . .	3,091	7,899	11,524	13,076	7,106	18,360
" " other countries 3) . . . . .	4,861	8,031	12,812	25,492	18,413	21,794
Hungary . . . . .	5,574	8,638	8,084	6,551	2,219	1,955
Yugoslavia 4) . . . . .	4,491	5,151	1,374	1,585	2,061	1,268
Germany . . . . .	1,215	1,374	1,347	1,057	1,057	898
Algeria-Tunis :						
destined to foreign countries . . . . .	2,140	2,298	2,985	3,170	4,887	3,540
" " France . . . . .	(335,550)	(357,317)	(281,870)	(270,141)	(191,920)	(211,205)
Total { Excluding exports destined to France . .	108,310	129,444	150,577	179,636	166,428	179,636
Including such exports except those of Algeria-Tunis destined to France . .	127,278	239,050	191,155	252,572	263,432	268,134
SOUTHERN HEMISPHERE						
(Season 1 July-30 June)						
Australia . . . . .	4,174	2,642	2,615	2,087	4,517	3,698
Union of South Africa . . . . .	1,057	925	740	555	...	...

1) Imports of Spanish wines into France. — 2) Export during the year 1 January-31 December; monthly data are not available. — 3) Including approximate figures of must exported. — 4) Export during the season 1 July-31 June.



latter country is the victim of a growing overproduction of which the effects can be clearly seen from 1929. Italy itself suffers from a disequilibrium between internal consumption, which has certainly been reduced but in an indeterminate proportion, and a production that seems to have an upward trend; for this country the abnormal export to France in 1930-31 was an outlet for the recent excess of supplies but one that was soon closed.

The same phenomenon of glut and of increase in production accompanied by a tendency of consumption to decrease may be noted in the countries that neither export nor import and in those that have a deficit and are consequently importers. In the former category scarcely any others but Rumania and Bulgaria can be included; their production has grown almost continuously, despite seasonal fluctuations, from 136,400,000 (163,800,000) gallons in the period 1923-1927 to 193,600,000 (232,500,000) in the quinquennium, 1927-31. An external market for these two countries is non-existent; though they still exported 484,000 (581,000) gallons in 1926 they exported only 24,000 (29,000) in 1931.

In the European and Mediterranean producing and importing countries apart from the Franco-Algerian-Tunisian group, the quantity available for inter-

*Methodological observations on the construction of Table II.*

As the Spanish statistics do not give, for the years previous to 1931, the quarterly exports destined for France it has not been possible to calculate on this basis the exports by seasons and it has been necessary to take as basis the figures of imports of Spanish wines into France; the latter are normally 11-20 million Imperial gallons (13-24 million American gallons) below the corresponding figures of Spanish exports but as this difference is due to the fact that part of the wines recorded as exports from France only cross this country in transit to Switzerland, more than to normal causes of a statistical nature, the figures given may be considered as giving a more exact idea of the Spanish export trade to France; the Spanish statistics give the figure of 68.5 Imperial gallons (81.3 American gallons) exported in 1930-31 destined to France and 17.1 (20.6) in 1931-32.

For Greece, the development of exports of must destined to France in recent years has made it necessary to take this trade into account; this export to France has been mentioned in the Greek statistics only since 1930, previous to which it figured under the heading "other countries"; only exports destined to Italy and Great Britain were mentioned separately; the export to "other countries", (including France, however) in seasons previous to 1929-30 was very small — 84,000 Imperial gallons or 100,000 Am. galls in 1926-27, nil in 1927-28, 218,000 (262,000) in 1928-29 — and when it became larger was almost entirely directed to France — in 1930-31, of 1.05 million Imp. galls (1.26 million Am. galls) destined to countries other than Italy and Great Britain, 1.04 (1.25) were directed to France; it results that by rounding the figures for the seasons 1926-27 and 1928-29 to 110,000 Imp. galls (130,000 Am. galls), by attributing nearly the whole of the exports in 1929-30 to the destination "other countries" (except Italy and Great Britain), and further, by rounding the total to 110,000 Imp. galls (130,000 Am. galls), fairly exact data are obtained of total wine and must exports destined to France.

For Yugoslavia, as detailed trade statistics have only been available since 1930 for half years, it has been necessary to take all data for the season 1 July-30 June; the movement of exports during this period is, however, quite the same as that recorded for the seasons 1 October-30 September in the period 1926-27 to 1929-30.

The differences in method required for some countries have made it necessary to round the totals but the latter give a sufficiently exact idea of the movement of exports during the period considered.

nal consumption, which averaged 132,000,000 (152,500,000) gallons in the period from 1925-26 to 1929-30, which had already a tendency to increase, was 165,000,000 (198,100,000) gallons in 1930-31 and 160,600,000 (192,800,000) gallons in 1931-1932, despite the progressive reduction in imports. There is in this case evidently a question of overproduction, affecting also the overseas producers, despite the very marked decrease in imports into the importing countries (Canada, Argentina, Brazil, Peru, Uruguay) and the relative development of imports into Australia and South Africa; in some countries, such as Argentina, it is in addition easy to see whether it is especially an artificial increase in the quantity actually produced. The exports of Chile, the only American exporting country, tend to diminish.

In brief the 1931-32 viticultural season was characterized in the first place by a general decrease in consumption affecting almost every country and, secondly, general restriction of trade, accentuated by the partial closing of the French market.

P. DE V.

*Austria* : On 1 March the crop condition of vines was 2.0 compared with 2.3 on 1 February of this year and 2.6 on 1 March 1932.

*Spain* : The month of February was in general rather cold and wet; work in the vineyards slackened but the vines did not seem to have suffered much damage; soil moisture is fairly abundant.

The wine trade was not very active during February and sometimes even at a standstill. The removal of barriers to the import of foreign wines erected by the French Government should, apparently, have brought about a fairly active movement of business as the quota of 40 million Imperial gallons (47.5 million American gallons) accorded to Spain, corresponding to the average volume of the period previous to 1930 and much larger than that of the preceding season, is sufficient to feed a normal trade movement; the quarterly functioning of this quota, with the impossibility of carrying over from one quarter to another, is considered to be a restriction by Spanish exporters, who estimate that due to this cause, the actual volume of exports will be much smaller than the annual quota as the quota figure cannot be attained during certain quarters.

Prices are fairly firm with some tendency to rise noted for La Mancha wines, which are fairly rare and much in demand, whereas the red wines of other regions (Utiel, Alicante, Priorato, etc.) show, on the contrary, some tendency to fluctuate; the quotations for white wines remain unchanged as the prohibition of mixing in France with French wines prevents their export.

*France* : The period of cold weather followed by a week's rain at the beginning of March has further retarded work in the southern vineyards; some delay is reported everywhere. The intense cold in the South has retarded growth and bud formation, which had been premature.

The condition of the vines is, on the whole, fairly satisfactory.

*Italy* : Though the first half of February was characterized by relatively high temperatures and small precipitation with frequent mist, the second half was cold with heavy snowfall in the north. Work in the vineyards was interrupted at times during

the latter period but the principal operations — hoeing, pruning and planting — were generally carried out normally.

Markets were very quiet during this period ; the strict application of the law concerning minimum alcoholic content has led to some demand in the northern areas for southern wines for mixing but the resulting activity has been restricted and of short duration ; at the beginning of March the market in Apulia and in Sicily was very quiet ; the export trade is still very quiet. Prices, often nominal, are fairly well maintained for good wines of normal alcohol content, very low for low-content wines, which are available in large quantity but little in demand.

*Cyprus* : Production of fresh grapes in 1932 was 1,400,000 centals as against 785,000 in 1931 (178.4 %) Production of raisins amounted to 115,000 centals as against 72,000 in 1931 and 97,000, the average for the preceding quinquennium. Percentages : 159.9 and 119.2.

*Algeria* : The rains of the second half of February brought beneficial moisture for further growth. Development, which had been checked by the low temperatures of the end of the month was vigorously renewed in the second week of March; budding was general toward the middle of that week in early stocks, a week ahead of normal. Winter work was completed under good conditions.

*Union of South Africa* : The vintage of 1933 is estimated at 10 % to 15 % less than that of last year.

*Australia* : In South Australia, which is by far the most important viticultural State, the vine situation at the end of January was excellent and gave rise to anticipations of satisfactory and even high yields; the chief official inspector of horticulture estimated at the end of January that the wine production might reach 12 million Imperial gallons (14.5 million American gallons), a quantity larger than that of the last two years but smaller than the quantity obtained in each of the five years 1926 to 1930 and nearly 2 million Imperial gallons (2.4 million American gallons) below the average for this period. Other private estimates indicate a crop below the normal due to the damage caused by thrips and frost but this indication does not substantially change the above forecast ; the quality of the wines will be particularly good.

In Victoria, which is second in importance as regards viticulture, prospects were also good, although blossoming was everywhere a little late and despite the spreading of powdery vine mildew in irrigated areas particularly devoted to the production of table raisins and raisins for drying and also some localized damage by hail ; rainfall has been well distributed and mildew, which appeared in November, practically disappeared under the influence of suitable treatment.

In New South Wales, during the period of maturity the vines suffered somewhat from low rainfall and temperatures below the normal, as well as from frost, the effects of which were, however, limited ; the appearance of the vines remains very good, despite such adversities and prospects are good.

On the whole, therefore, Australian production promised at the end of February to be decidedly above the crops of the last two years, but smaller than those of all of the previous seasons from 1926 to 1930. Forecasts place it between 15 and 16 million Imperial gallons (18 and 19 million American gallons).

According to the report previously mentioned, the forecasts of the production of table grapes or grapes for drying in South Australia are as follows: 7,000 tons of sultanas 1,500 cf lexias and 7,000 of currants. The production of this State represents

only a small part of the total Australian production but there is reason to believe, on the basis of the preceding indications, that the latter will be fairly abundant.

From the commercial point of view the present wine production greatly exceeds the possibilities of marketing. Despite the great increase, due particularly to the Ottawa agreements, in exports to Great Britain and other countries, especially Canada, the latter will not be able to absorb the considerable surplus, to which must be added in South Australia alone 15 ½ million Imperial gallons (18.5 million American gallons) of stocks; England has absorbed, in the three months October-December, a quantity larger than that received during the same period of last year but the whole of this quantity could not be absorbed for consumption and has accumulated in the customs warehouses; the Australian shipments have, however, decreased during the last few months of 1932.

## OLIVES

*Italy* : Picking of olives was almost everywhere completed in February.

*Portugal* : Many young trees were planted in February. The area of olives is continually extending.

*Syria and Lebanon* : The olives have been damaged by drought during the growing period and rainfall has so far been insufficient.

### Olives and Olive Oil Production.

COUNTRIES	AREA				ENGLISH MEASURES			AMERICAN MEASURES			% 1932/33	
	1932/33	1931/32	Aver. 1926/27 to 1930/31	% 1932/33	1932/33	1931/32	Aver. 1926/27 to 1930/31	1932/33	1931/32	Average 1926/27 to 1930/31	1931/1932 = 100	Aver. = 100
	Thousand acres				Thousand centals			Thous- / s) pounds and t) Amer. gallons			%	
Spain 1) . .	4,830	4,723	4,396	102.3	109.9	(s) ... 39,818 7,741 42,939 (t) 7,601 7,741 8,211	...	3,981,789	4,293,906	...	...	...
Greece . .	—	—	—	—	—	(s) 2) 880 2) 700 2) 611 (t) 2,636 2,286 1,811	...	88,018	69,970	61,129	98.2	92.6
Italy 3) / a)	2,054	2,055	1,437	99.9	143.0	(s) 29,041 31,051 27,293	...	2,904,060	3,105,102	2,729,260	115.3	144.0
Portugal . .	3,181	3,179	4,273	100.1	74.4	(s) ... 4,827 4,216 (t) ... 1,504 988	...	...	63,431	55,401	93.5	106.4
United States	—	—	—	—	—	(s) 440 320 394	...	44,000	32,000	39,360	...	...
Syria and Lebanon	191	190	179	100.4	106.8	(s) 658 1,510 1,208 (t) 92 227 244	...	65,754	151,030	120,807	43.5	54.4
Algeria . .	—	—	—	—	—	(s) 3,858 4,700 3,567 (t) 384 593 457	...	385,810	469,996	356,708	40.3	37.5
Tunis . . .	—	—	—	—	—	(s) 1,102 1,102 820	...	5,042 7,794 6,006	14,485	10,777	82.1	108.2
											64.7	83.9
											100.0	134.4

a) Pure crop. — b) Mixed crop. — s) Olives. — t) Oil. — 1) Area bearing. — 2) Olives for table. — 3) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey.

## COTTON

*Barbados* : Pink bollworm has appeared early and in large numbers.

*United States* : In the week ended on 28 February ploughing and preparation for spring planting were backward in the cotton belt though considerable work had recently been done in the Atlantic Coast States, where the soil was mostly dry enough to work.

*India* : At the beginning of February, cotton picking had been finished in the Central Provinces. In the latter half of the month rainfall was general accompanied by hailstorms. In the Punjab the spell of dry weather was broken by general rains in the week ended on 27 February with a maximum of 3.13 inches (80 mm.) at Ambala. The condition of standing crops was average to good on irrigated areas and under average to average a unirrigated. No rain fell in Madras.

*Egypt* : Cotton planting began in the second week of February, a week earlier than last year, when there was a delay of 15 days. The area sown in the whole of the country up to the beginning of March was still limited but the current opinion is that the maximum permitted by the law (see Crop Report, October 1932), will be sown as the areas destined to cereals and sugar-cane show a considerable decrease. It is anticipated that in the first week of March there will have been sown 65 % of the land destined to cotton in Upper Egypt and 50 % in the South of the Delta and in the lands in the North of the Delta where the rice crop has been harvested. The weather has so far been very favourable.

Cotton ginned up to the end of February was as follows, in bales of 478 lb. net weight :

	1933	1932	1931	1930	1929
Sakellaridis . . . . .	210,300	216,200	301,600	435,800	445,400
Other varieties above :					
1 3/8 inches . . . . .	94,900	887,400	900,900	982,000	980,900
1 1/4 inches . . . . .	64,100				
1 1/8 inches . . . . .	500,400				
Total . . . . .	869,700	1,103,600	1,202,500	1,417,800	1,426,300
Scarto (linters) . . . . .	20,100	29,400	29,200	33,500	40,700

*Uganda* : The abnormally heavy rains that were general during the last week of January and the first week of February caused a certain amount of damage and loss of crop in Buganda Province, where the rains coincided with a heavy picking period and caused some rot in mature bolls. In the Eastern and Northern Provinces, where the bulk of the crop had been harvested, the effect on the volume of the crop was only slight although the grade in certain areas was lowered ; it is considered that the total yield from Buganda will be reduced by 10 %. It is possible, however, that, owing to the low prices and the inclination of the grower to take advantage of the early rains for planting of his food crops, a certain amount of the cotton crop may not be marketed on account of early uprooting.

## FLAX

*Canada* : The area of flax grown in 1932 for the production of fibre seed and tow together with the corresponding data of production are given in the following summary :

<i>Area (in acres) :</i>		1932	1931	Average 1926-1930	% 1932 1931 = 100 Av. = 100	
Flax for fibre, etc. . . . .		5,135	4,220	5,518	121.7	93.1
<i>Production :</i>						
Seed (centals) . . . . .		20,130	20,090	24,740	100.2	81.4
(bushels) . . . . .		35,950	35,870	44,170		
Tow (centals) . . . . .		71,040	60,380	95,200	117.7	74.6
(short tons) . . . . .		3,550	3,020	4,760		
Fibre (centals) . . . . .		2,000	250	—	800.0	—

Of the 5,135 acres sown in 1932, 2,000 acres were sown to the T. W. S. variety and the remainder mainly to the ordinary Dutch seed. The acreage sown was about 22 % larger than that of 1931 and the increase in production was chiefly of tow (+ 17.7 %). Fibre production has shown a recovery in the last two years ; previously, in the period 1926-1930, no production was officially recorded after the 14,400 centals obtained in 1925. Production of seed was about the same as in 1931.

*United States:* According to a report of farmers' intentions to plant as on 1 March published by the Department of Agriculture, the area intended to be sown to flax seed this year is 1,819,000 acres or 12.8 % less than that actually harvested last year.

*India :* Rainfall during February varied from light to moderate in Bihar and Orissa. In the United Provinces general rains fell in the latter half of the month. Some damage by rats, hail and frost was reported. The condition of standing crops on 25 February was fair. General rains and hailstorms occurred in the latter half of February in the Central Provinces.

According to a Government report of 23 February for the whole of India, the condition and prospects of the linseed crop were, on the whole, reported to be fair to good.

## TOBACCO

*Italy :* Sowing of tobacco began in February.

*United States :* In the week ended on 28 February tobacco seedbeds were being planted in Florida while burning and seeding were advancing in Tennessee ; some preparations had begun in other tobacco sections.

According to a report of farmers' intentions to plant as on 1 March published by the Department of Agriculture, the area which it is intended to plant to tobacco is 1,747,000 acres or 21.9 % larger than that actually harvested last year.

*India :* Rain and frost caused some damage to tobacco at the beginning of February in the Saran and Darbhanga districts of Bihar and Orissa.

*Algeria :* At the end of February first sowings were fairly advanced and the plants vigorous and well developed despite some damage due to cold winds and hail; plantings were begun in the first half of March.

## OTHER PRODUCTS

### Cacao.

*Brazil :* Entries of cacao by rail in the Ilheos and Rio de Contas zones in February were substantially smaller than in the same month last year, as is indicated in the following table.

	February 1933	May 1932 to February 1933	February 1932	May 1931 to February 1932
Ilheos zone (1000 lb.) . . . . .	7,050	104,354	12,170	93,768
Rio de Contas zone (1000 lb.) . . . . .	886	15,238	2,381	8,020

The transport of the crop is now nearing completion.

Weather in February was more favourable but rainfall was still much below average and more was needed. Rainfall at Ilheos was 133 mm. (5.25 inches) against the average of 172 mm. (6.78 inches).

Prospects for the 1933-34 crop were reported to be satisfactory.

*Grenada, British West Indies* : Rainfall in January was good and the crop of cacao was expected to be larger than that of last year. For a number of plantations prices are said however, to be below cost of production. Efforts are being made to improve quality.

*St. Lucia* : In January picking of the main crop was coming to an end. Production was larger than in 1932. The spring crop was promising in some areas.

*Trinidad* : In the early part of February it was expected that the crop of cacao would be rather poor. Picking was proceeding spasmodically.

Weather remained very unsettled in February and has favoured the spread of witchbroom (*Marasmius perniciosus*). Drying has proved difficult.

*Gold Coast* : Up to the end of November the provisional estimate of the 1932-1933 major crop was 437 million pounds; this figure was then substituted by that of 430 million pounds, following on reports from agricultural officers up-country that yields were lower than the average of the past five years (437 million pounds) but higher than those of 1931-32 (423 million pounds) and that beans this season have been smaller than usual.

At the end of January 1933 there was a body of opinion which held that the present major crop would prove to be very much larger than had been estimated.

Up to 24 January agricultural officers' reports offer no evidence that the standing estimate is too low. Seven districts (Juaso, Asuansi, Winneba, Aburi, Tafo, Kibi, Huhunya) report yields lower than the average of the past five years, two districts (Dunkwa, Koforidua) report higher yields and five districts (Sekondi, Saltpond, Oda, Anyinam, Nsawam) average yields. In comparison with 1931-32 five districts (Juaso, Sekondi, Asuansi, Oda, Poso) estimate yields of the same size, three (Winneba, Aburi, Tafo) report lower yields and seven (Dunkwa, Saltpond, Koforidua, Anyinam, Kibi, Nsawam, Huhunya) higher yields. So far as unit-yields are concerned, therefore, a crop of a size between that of 1931-32 (423 million pounds) and that of the average for the past five years (437 million pounds) is expected. If a very much larger crop proves to have been obtained it will have been due either to new areas coming into bearing or to a reduction in harvesting losses.

As regards the evidence of shipments, the exports from all ports from 1 October 1932 up to 31 January 1933 amounted to 265 million pounds against 230 million for the same period last season and 232 million, the average for the past four seasons. This season, therefore, shipments are considerably ahead of the normal. In assessing the significance of this it must be kept in mind that throughout this season all reports have stated that the crop is unusually early.

As regards future shipments, it is commonly stated that on 1 February 1933 merchants held 224 million pounds of unshipped stocks. To arrive at the true figure for the major crop, carryover from the last minor crop or mid-crop must be deducted, while purchases of early major crop in September 1932, as well as cacao to be marketed by growers in February 1933, must also be taken into account.

Assuming the statement of stocks to be correct the position would therefore be as follows :

	Million pounds
Shipments from 1 September 1932 to 31 January 1933 . . . . .	283
Stocks unshipped on 1 February 1933 . . . . .	224
	—
Total . . . . .	507
Deduct total carryover on 1 September 1932 . . . . .	36
	—
Total . . . . .	471
Deduct Togoland figures . . . . .	7
	—
Total . . . . .	464
Estimated balance of crop held by growers and due to be marketed in February 1933 . . . . .	24
	—
Total major crop . . . . .	488

The estimated balance of crop held by growers is computed from up-country reports which state that 95 % of the crop had been harvested and presumably marketed on 24 January 1933.

The figure arrived at (488 million pounds) is higher than has ever before been recorded for a major crop. As unit-yields have been reported to be lower this year than normal, the enormous crop indicated by these figures must (if they are correct) be due to new areas suddenly coming into production, to an equally sudden improvement in harvesting methods or to both. The area necessary to account for the difference between 430 million and 488 million pounds would be 105,000 acres ; the Department of Agriculture has, however, no evidence that large new areas have suddenly come into production this season. It is possible that for financial reasons growers are now picking more carefully than in the past but it is hardly credible that such an improvement would account for the additional 58 million pounds.

Only when the final shipment figures become available will it be possible to ascertain the truth.

## Tea.

*India* : According to a report of 2 March received by the Department of Commercial Intelligence and Statistics, the weather in North India during January was seasonably cold and in most districts there was no rain at all. The whole of the past season's crop had been harvested and no crop was harvested during January.

In South India, the weather was not very favourable, being cold and very dry, and there were prevailing high winds. Without rain crop prospects were not good. The outturn was 2.83 % ahead of that to the same date of last year.

## Colza and sesame.

*Austria* : On 1 March condition of winter colza was 2.3 against 2.6 on 1 February this year and 2.9 on 1 March 1932.

*Hungary* : Winter colza has wintered well. At the close of the first decade of March its growth was vigorous save for gaps in a few places.



*Rumania* : At the beginning of March the crop condition of winter colza was not satisfactory. In the spring it will be necessary to resow part of the fields sown to this crop last autumn.

*Cyprus* : The area under sesame increased to 7,200 acres in 1932 from 6,200 in 1931 and 3,500, the average for the preceding quinquennium. Percentages: 116.6 and 208.6. Production, on the contrary, declined to 1,200 centals (60 short tons) from 9,500 (475) in 1931 and 6,200 (310), the average. Percentages: 13.1 and 20.1.

*India* : Rainfall in Bihar and Orissa was mostly light to moderate during February. The weather was dry in the Punjab until after the 20th of the month, when general rains fell. Rapeseed was damaged by the cold in Gurgaon. The condition of standing crops of colza was average to good on irrigated areas and under average to average on unirrigated. Rainfall was variable in Bengal; general rains fell at about the middle of the month and moderate to heavy rains in the third week in West Bengal.

*Turkey* : The area under sesame in 1932 was 125,000 acres against 69,000 in 1931 and 131,000 on the average of the four years ending 1930, percentages 180.6 and 95.0. Production in 1932 was 476,000 centals (23,800 short tons), 70.9 % of that of 1931, which was 671,000 (33,500), and 78.5 % of the four year average, 606,000 centals (30,300 short tons).

## **Jute.**

*India* : Ploughing was progressing in Bengal in February

## SUPPLEMENTARY FIGURES

As the production and area for most countries were published in the February number of the Monthly Crop Report and Agricultural Statistics, it is not necessary to repeat them again this month. Hence only the new data and any modifications of the figures published last month are given in continuation. In another table is shown the total world production based on the figures received up to the time of going to press.

COUNTRIES	AREA						PRODUCTION							
	1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33		Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33	1931 and 1931/32	1932 and 1932/33		
				1931 and 1931/32	Aver. 1932 = 100							1931 and 1931/32	Aver. 1932 = 100	
1,000 acres						1,000 centals			1,000 bushels					
WHEAT														
Irish Free State . . . . .	21	21	30	102.6	71.0	498	468	725	831	781	1,208	106.4	68.8	
Greece . . . . .	1,496	1,496	1,300	100.0	115.1	10,177	6,737	7,152	16,961	11,228	11,920	151.1	142.3	
Sweden . . . . .	746	683	544	109.2	137.0	15,900	10,829	10,276	26,500	18,048	17,126	146.8	154.7	
—														
Cyprus . . . . .	172	183	181	93.6	94.9	709	974	1,095	1,182	1,623	1,824	72.8	64.8	
Turkey . . . . .	8,555	8,773	1) 6,135	97.5	139.4	41,607	61,457	1) 45,291	69,344	102,426	1) 75,484	67.7	91.9	
—														
Argentina . . . . .	2) 17,789	2) 16,029	2) 19,401	111.0	91.7	141,228	131,821	150,756	235,376	219,697	251,255	107.1	93.7	
RYE.														
Greece . . . . .	181	172	131	105.7	138.3	1,365	1,008	898	2,438	1,800	1,603	135.4	152.0	
Sweden . . . . .	516	511	686	100.9	75.2	9,573	6,577	9,925	17,094	11,745	17,723	145.6	96.5	
—														
Turkey . . . . .	504	834	1) 611	60.5	82.5	4,368	7,818	1) 4,683	7,800	13,961	1) 8,363	55.9	93.3	
—														
Argentina . . . . .	3) 1,624	3) 1,378	3) 1,065	117.8	152.4	7,275	5,456	3,534	12,992	9,744	6,311	133.3	205.9	
BARLEY.														
Irish Free State . . . . .	103	116	125	89.0	82.4	2,388	2,362	2,939	4,974	4,921	6,122	101.1	81.3	
Greece . . . . .	574	550	472	104.3	121.5	4,734	3,430	3,333	9,862	7,146	6,945	138.0	142.0	
Sweden . . . . .	293	311	333	94.2	87.9	5,234	5,143	5,394	10,904	10,716	11,237	101.8	97.0	
—														
Cyprus . . . . .	94	93	118	101.9	79.8	469	666	1,111	976	1,387	2,314	70.4	42.2	
Turkey . . . . .	3,401	3,769	1) 3,140	90.2	108.3	25,679	35,940	1) 26,059	53,499	74,877	1) 54,290	71.4	98.5	
OATS														
Irish Free State . . . . .	623	623	650	100.0	95.8	14,049	11,666	14,628	43,904	36,457	45,713	120.4	96.0	
Greece . . . . .	367	344	279	106.7	131.4	2,211	1,688	1,595	6,910	5,274	4,985	131.0	138.6	
Sweden . . . . .	1,579	1,590	1,729	99.3	91.3	26,191	22,326	25,867	81,845	69,767	80,835	117.3	101.2	
—														
Cyprus . . . . .	11	13	14	87.5	83.8	40	84	85	126	262	266	48.1	47.5	
Turkey . . . . .	294	405	1) 336	72.6	87.4	2,793	2,590	1) 2,362	8,729	8,095	1) 7,380	107.8	118.3	
—														
Argentina . . . . .	3) 3,652	3) 3,470	3) 3,535	105.3	103.3	22,267	22,170	20,033	69,583	69,280	62,603	100.4	111.1	
POTATOES.														
Irish Free State . . . . .	348	346	363	100.6	96.0	67,545	43,279	53,605	112,576	72,132	89,341	156.1	126.0	
Greece . . . . .	32	34	27	92.1	118.5	1,710	1,383	908	2,849	2,306	1,513	123.6	188.3	
Sweden . . . . .	338	327	354	103.3	95.3	47,039	33,020	36,508	78,397	55,033	60,846	142.5	128.8	
—														
Cyprus . . . . .	6	6	8	110.8	79.5	496	451	387	827	751	645	110.0	128.3	
Turkey . . . . .	82	101	1) 75	81.5	109.7	1,582	3,170	1) 1,750	2,637	5,284	1) 2,916	49.9	90.4	

COUNTRIES	AREA						PRODUCTION							
	1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33		1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33		
				1931 and 1931/32	Aver. = 100							1931 and 1931/32	Aver. = 100	
1,000 acres			1,000 centals			1,000 bushels								
SUGAR-BEET.														
1,000 short tons														
Sweden . . . . .	101	87	75	115.5	133.5	34,261	19,317	18,577	1,713	966	929	177.4	184.4	
Turkey . . . . .	37	29 1)	20	128.2	186.1	3,285	5,443 1)	902	164	272 1)	45	60.3	364 2	
VINES (WINE).														
						1,000 Imperial gallons			1,000 American gallons					
Germany . . . . .	177	176	179	100 5	98 9	37,873	62,463	40,928	45,482	75,012	49,151	60 6	92 5	
Greece 4) . . . . .	352	315	283	111 5	124 5	65,451	42,793	56,283	78,601	51,391	67,591	152 9	116 3	
Cyprus . . . . .	119	117	94	101.5	126 1	3,628	1,917	4,928	4,356	2,302	5,918	189.2	73.6	
COTTON (GINNED)														
						1,000 centals			1,000 bales of 478 lb					
Greece. . . . .	71	46	42	155.7	168 8	76	65	73	16	14	15	116 3	103 8	
Cyprus . . . . .	6	11	13	56.2	46 7	4	11	13	1	2	3	39.1	33.3	
Turkey . . . . .	358	491	378	72.8	94 7	135	434	419	28	91	88	31 1	32.2	
Uganda . . . . .	1,070	866	641	123.6	166 9	1,040	780	634	218	163	133	133 1	164.1	
A.-E. Sudan . . . . .	324	336	299	96.6	108 4	...	985	593	..	206	124	...	..	
FLAX														
a) 1,000 pounds b) 1,000 bushels														
N Ireland . . . . .	6	7	31	81.9	19 5	a) 26	31	131	2,565	3,091	13,058	83 0	19 6	
Latvia . . . . .	78	104	150	75.5	52.3	(a) 208	287	450	20,812	28,660	43,955	72 6	47 3	
—						(b) 197	279	411	352	499	735	70.6	47.9	
Cyprus . . . . .	1	3	2	32.8	56 0	(a) 5)	2	3	47	24	26	19.5	18.6	
Turkey . . . . .	34	69 1)	14	49.4	237.5	(b) 107	97 1)	90	4	28	16	14.2	25.0	
Argentina . . . . .	2) 5,655	2) 8,178	2) 6,310	69 1	89 6	b) 29,291	49,878	41,461	190	172 1)	162	110.3	117.7	
TOBACCO.														
1,000 pounds														
Canada . . . . .	...	55	40	...	...	524	513	363	52,450	51,300	36,263	102.2	144.6	
Turkey . . . . .	65	170	155	38.0	41 7	276	1,127	1,066	27,607	112,680	106,582	24.5	25.9	
HOPS														
Belgium . . . . .	1	2	3	69.0	42 7	15	11	46	1,531	1,148	4,588	133.3	33.4	
Yugoslavia . . . . .	4	6	16	62.8	22.9	18	35	75	1,819	3,499	7,516	52.0	24.2	

a) Fibre. — b) Seed. — 1) Average 1927-30. — 2) Area harvested. — 3) Area sown. — 4) Production in expressed in terms of must. — 5) Production under 500 centals.

## TOTALS OF WORLD AGRICULTURAL PRODUCTION

The following totals have been obtained from the data in the tables published for each product in January, which have been revised and completed. With the name of each product is indicated the number of countries for which data for 1932 are at present available and also the percentage of their total production in 1931 to world production in the same year as published in the 1931-32 Yearbook, when they comprised nearly all producing countries, except U. S. S. R.

Crop, number of countries comprised in the total, and percentages of world production	AREA						PRODUCTION							
	1932 and 1932-33	1931 and 1931-32	Average 1926 to 1930 and 1926-27 to 1930-31	Percentages for 1932 and 1932-33		British weights			American weights			Percentages for 1932 and 1932-33		
				1931 and 1931-32 = 100	Average = 100	1932 and 1932-33	1931 and 1931-32	Average 1926 to 1930 and 1926-27 to 1930-31	1932 and 1932-33	1931 and 1931-32	Average 1926 to 1930 and 1926-27 to 1930-31	1931 and 1931-32 = 100	Average = 100	
thousand acres			%		thousand centals			thousand bushels			%			
Wheat (48 countr 97 %) . . . . .	249,592	245,735	241,771	101.6	103.2	2,209,928	2,235,210	2,187,147	3,683,139	3,725,276	3,645,173	98.9	101.0	
Rye (29 countries 99 %) . . . . .	46,948	47,032	47,961	99.8	97.9	562,990	468,420	525,388	1,005,342	836,466	938,195	120.2	107.2	
Barley (43 countr. 90 %) . . . . .	63,717	62,731	61,622	101.6	103.4	709,472	619,516	681,471	1,478,093	1,290,682	1,419,756	114.5	104.1	
Oats (38 countries 98 %) . . . . .	101,895	100,855	102,558	101.0	99.4	1,162,116	1,042,182	1,135,885	3,631,586	3,256,794	3,549,615	111.5	102.3	
Maize (24 countries 79 %) . . . . .	155,426	153,005	144,423	101.6	107.6	2,162,218	1,934,460	1,895,276	3,861,105	3,454,399	3,384,426	111.8	114.1	
Rice (rough) (15 countr. 87 %) . . . . .	116,187	117,723	114,597	98.7	101.4	1,661,745	1,697,540	1,650,260	3,692,698	3,772,238	3,667,175	97.9	100.7	
Potatoes (33 countr. 94 %) . . . . .	30,434	30,120	28,983	101.0	105.0	3,376,378	3,214,767	2,965,893	5,627,184	5,357,838	4,943,057	105.0	113.8	
Sugar-beet (20 c. 97 %) . . . . .	4,132	4,626	5,105	89.3	80.9	982,066	1,023,918	1,130,808	49,103	51,195	56,540	95.9	86.8	
Cotton ginned (16 countr. 94 %) . . . . .	68,825	73,050	78,778	94.2	87.4	95,844	115,662	113,673	20,051	24,197	23,781	82.9	84.3	
Linseed (15 countr. 93 %) . . . . .	11,738	14,629	13,757	80.2	85.3	47,532	67,828	66,225	84,878	121,121	118,259	70.1	71.8	
Flax (fibre) (14 countr. 85 %) . . . . .	568	739	1,026	76.9	55.4	1,823	2,493	4,597	182,323	249,344	459,665	73.1	39.7	
Hemp (fibre) (7 countr. 48 %) . . . . .	257	262	353	98.1	72.7	1,715	1,779	2,855	171,520	177,914	285,500	96.4	60.1	
Tobacco (12 countr. 48 %) . . . . .	2,041	2,837	2,632	72.0	77.6	15,404	22,864	20,882	1,540,375	2,286,422	2,088,226	67.4	73.8	
Hops (7 c. 95 %) . . . . .	94	109	141	86.4	66.7	780	919	1,365	78,044	91,933	136,467	84.9	57.2	
Olive oil (6 countr. 62 %) . . . . .	—	—	—	—	—	11,817	11,949	11,541	155,280	157,018	151,658	98.9	102.4	
Vines (18 c. 95 %) . . . . .	—	—	—	—	—	3,525,173	3,546,291	3,251,634	4,233,416	4,258,777	3,904,920	99.4	108.4	
Silk (8 c. 92 %) . . . . .	2) 6,818	2) 7,020	2) 7,549	97.1	90.3	851,236	919,474	947,989	851,236	919,474	947,989	92.6	89.9	

1) Wine. — 2) Eggs in incubation. — 3) Cocoons.

## FODDER CROPS

*Austria* : On 1 March condition of the principal fodder crops was as follows : red clover 2.6 (against 2.6 on 1 February of this year and 2.9 on 1 March 1932); alfalfa 2.5 (2.6, 2.9) ; mixed clover 2.6 (2.5, 2.6) ; permanent meadow 2.5 (2.6 2.9) and pasture 2.4 (2.5, 3.1).

*Irish Free State* : Though a severe blizzard accompanied by thunder and lightning occurred during the last few days of February, creating large snow-drifts, no serious damage to crops was reported.

The following are the data, with comparative figures, for production of turnips and mangolds in 1932.

	1932	1931	Average 1926-30	% 1932 1931=100	% 1932 1926-30=100
Turnips (ooo centals) . . . . .	75,801	73,982	78,871	102.5	96.1
(ooo sh. tons) . . . . .	3,790	3,699	3,943		
Mangolds (ooo centals) . . . . .	36,682	34,493	34,903	106.3	99.4
(ooo sh. tons) . . . . .	1,834	1,725	1,845		

*France* : Appearance of pasture and temporary meadows at the end of February was good.

*Great Britain and Northern Ireland* : The early part of February was fairly dry, becoming colder with frost toward the middle of the month, wet weather subsequently became general and there was a heavy fall of snow throughout the area in the latter part of the month. At the end of February much of the land was still covered with snow or under water.

Temporary meadow was reported in England and Wales to be healthy and vigorous though checked by frost in some districts. In Scotland pastures were bare.

In the first half of the month considerable progress with ploughing was generally made but with the coming of snow work on the land came to a standstill in most districts. At the end of the month, however, work was generally about as forward as usual. In Scotland a considerable proportion of the root crops was frosted.

*Hungary* : The clover and alfalfa crops have wintered well and on about 10 March active growth began. No serious damage is reported. Sowings of spring fodder crops have not begun except in a few isolated cases. Growth of permanent meadows and pastures has recovered slowly but only in the Alföld area and on sandy lands.

*Italy* : In the following table are given the definitive data of area and production in 1932 of fodder crops in terms of ordinary hay, compared with the final figures for 1931 and the average for the period 1926-1930 :

## Area in thousand acres.

	1932	1931	Average 1926-1930	% 1932 1931=100	Average =100
Temporary meadows . . . . .	6,571	6,571	5,294	100.0	124.1
Grass, mixed . . . . .	1,557	1,421	1,258	109.6	123.8
Unirrigated permanent meadows . . . .	3,247	3,259	3,332	99.6	97.5
Irrigated permanent meadows . . . . .	776	783	816	99.1	95.2
Permanent pastures . . . . .	11,038	11,095	12,240	99.5	90.2

*Production.*

Temporary meadows	(ooo centals)	297,435	230,443	231,394	} 129.1	128.5
	(ooo sh. tons)	14,872	11,522	11,570		
Grass	(ooo centals)	46,976	37,706	33,413	} 124.6	140.6
	(ooo sh. tons)	2,349	1,885	1,671		
Unirrigated permanent meadows	(ooo centals)	73,754	65,067	71,456	} 113.3	103.2
	(ooo sh. tons)	3,688	3,253	3,573		
Irrigated permanent meadows	(ooo centals)	52,272	45,867	49,117	} 114.0	106.4
	(ooo sh. tons)	2,614	2,293	2,456		
Permanent pastures	(ooo centals)	57,918	50,870	59,917	} 113.9	96.7
	(ooo sh. tons)	2,896	2,543	2,996		
Accessory fodder production	(ooo centals)	117,253	102,480	81,977	} 114.4	143.0
	(ooo sh. tons)	5,863	5,124	4,099		
Total production of fodder	(ooo centals)	645,608	532,433	527,274	} 121.3	122.4
	(ooo sh. tons)	32,282	26,620	26,365		

*Italy* : Cutting of hay and *marcite* continued ; meadows were promising. Fodder stocks are sufficient.

*Canada* : The area of pastures in 1932 was 8,265,000 acres compared with 9,428,000 in 1931 and 9,577,000, the average for the period 1926 to 1930 ; percentages . 87.7 and 86.3.

These figures include pastures in the Indian reserves but are not entirely comprehensive since the figures for the form western provinces are " seeded pastures " only. Most of the area used for pasture in these provinces is " natural " and complete data can only be secured by the quinquennial census.

*United States* : In the week ended on 28 February pastures showed improvement in most of the East, although they were dry and poor locally.

*Algeria* : Condition of pastures and tracks was very satisfactory at the beginning of March ; that of permanent and temporary meadows led to the expectation of an abundant crop

*Egypt* : Third cutting of early *berسيم* has begun in Lower Egypt, where hay-making is in progress on large holdings.

*French Morocco* : The tracks have continued on the whole to improve and supply sufficient feed though quality often leaves much to be desired.

## LIVESTOCK AND DERIVATIVES

## Number of pigs in Denmark.

In the following table is given the number of pigs in January 1933, compared with the figures for the same date in preceding years.

	23 January 1933	15 January 1932	15 January 1931	Increase (+) or decrease (—) in 1933 with respect to 1932		Increase (+) or decrease (—) in 1933 with respect to 1931	
Boars 4 months old and over .	28,000	30,000	27,000	—	6.7	+	3.7
Sows in farrow 4 months old and over . . . . .	308,000	355,000	385,000	—	13.2	—	20.0
Sows not in farrow . . . . .	166,000	195,000	189,000	—	14.9	—	12.2
Pigs for fattening 4 months old and over . . . . .	1,140,000	1,320,000	1,179,000	—	13.6	—	3.3
Young pigs from 2 to 4 months old . . . . .	1,480,000	1,932,000	1,769,000	—	23.4	—	16.3
Sucking pigs under 2 months old . . . . .	1,421,000	1,655,000	1,632,000	—	14.1	—	12.9
* Total . . .	4,543,000	5,487,000	5,181,000	—	17.2	—	12.3

As has already been indicated at the time of the special census of pigs on 19 November 1932 (see Crop Report of January 1933) the total shows a distinct tendency to decline and the figure for January 1933 is 17.2 % below that for 15 January 1932; the heaviest fall is in young pigs two to four months old; sows in farrow show a decrease of 13.2 % with respect to 1932 and of 20 % with respect to 1931.

The heavy reduction in pig-rearing in Denmark, which specializes on bacon production, is due largely to the unprecedented fall in prices, which is demonstrated in the following table.

## Prices of bacon in Denmark.

(Danish crowns per kilogram).

	1932	1931	1930	1929	1928	1927	1926	1925
January . . . . .	0.62	0.88	1.54	1.42	1.18	1.36	2.01	2.46
February . . . . .	0.65	0.84	1.58	1.49	1.18	1.34	1.91	2.38
March . . . . .	0.68	0.86	1.58	1.59	1.21	1.39	1.81	2.43
April . . . . .	0.68	0.94	1.58	1.74	1.24	1.39	1.87	2.51
May . . . . .	0.72	0.96	1.42	1.72	1.30	1.45	1.92	2.45
June . . . . .	0.72	0.76	1.40	1.64	1.45	1.46	1.90	2.50
July . . . . .	0.76	0.80	1.28	1.73	1.54	1.40	1.81	2.24
August . . . . .	0.89	0.92	1.22	1.76	1.54	1.35	1.85	2.16
September . . . . .	0.93	0.80	1.15	1.55	1.54	1.43	1.74	2.06
October . . . . .	0.78	0.80	0.99	1.48	1.39	1.30	1.64	1.97
November . . . . .	0.78	0.72	1.00	1.50	1.35	1.18	1.60	1.90
December . . . . .	0.84	0.62	0.91	1.52	1.46	1.15	1.50	2.02
Annual mean . . .	0.75	0.82	1.30	1.59	1.36	1.35	1.80	2.26

The annual mean for 1932 is only about one-third of that for 1924 and the fall appears all the more marked when account is taken of the depreciation of the Danish crown since the end of September 1931, the crown having fallen by about 37 % with respect to the dollar between that date and December 1932. It should however be noted that during the last months of 1932 prices began to recover and were higher than in the corresponding period of 1931.

As regards the bacon export, which is directed almost entirely to Great Britain, total shipments in 1932 showed a further increase of about 30,865,000 pounds (+ 3.6 %).

*Export of bacon from Denmark.*

(000 pounds).

MONTHS	1932	1931	1930	1929	1928	1927
January . . . . .	76,679	72,284	51,543	40,830	54,003	44,572
February . . . . .	73,109	64,922	43,311	41,472	50,311	42,180
March . . . . .	74,713	68,245	51,302	42,079	56,029	49,450
April . . . . .	79,003	66,326	46,615	45,649	50,682	39,304
May . . . . .	52,850	65,623	57,094	49,162	52,010	49,555
June . . . . .	83,190	62,768	51,052	41,774	50,332	49,692
July . . . . .	78,547	71,143	53,404	43,857	46,681	47,279
August . . . . .	64,760	65,999	56,433	49,005	46,941	47,010
September . . . . .	73,785	65,517	61,540	49,443	45,482	47,375
October . . . . .	74,262	74,612	67,870	45,405	49,677	46,130
November . . . . .	63,783	74,593	64,823	51,820	49,319	46,000
December . . . . .	64,615	77,181	70,487	48,165	48,653	56,406
TOTAL . . . . .	859,296	829,213	675,474	548,661	600,120	564,953

1) January 1933: 58,996 thousands pounds.

From the end of October, however, exports showed a distinct decrease and in January 1933 were 23.1 % below those of the corresponding period of 1932.

**Livestock in Latvia.**

In the table below are given the numbers of livestock in 1932 and in the preceding ten years.

*Livestock in Latvia.*

YEAR	Horses	Cattle	Sheep	Pigs
	(Thousands)			
1932. . . . .	366.0	1,153.1	984.0	581.6
1931. . . . .	366.3	1,116.9	923.1	712.1
1930. . . . .	359.0	1,026.3	872.9	522.7
1929. . . . .	356.3	978.4	905.5	382.2
1928. . . . .	365.2	960.6	1,090.4	535.0
1927. . . . .	369.3	966.6	1,127.5	534.6
1926. . . . .	365.0	955.0	1,152.0	521.0
1925. . . . .	351.9	915.8	1,181.6	497.1
1924. . . . .	340.2	905.0	1,235.0	458.0
1923. . . . .	341.2	910.9	1,488.2	487.3
1922. . . . .	303.0	810.5	1,161.5	402.0



The number of horses reached its highest point in 1927, decreased in the following two years, then showed an increase in 1930 and a still larger increase in 1931. The figure for 1932 differs little from that of 1931 but exceeds the number in 1922 by 20.8 %.

The number of cattle has increased almost without interruption for the last ten years and the figure for 1932 is 42.3 % above that of 1922.

Sheep numbers have, on the contrary, constantly declined since 1923; a recovery took place in 1931 however, and continued in 1932 although the total number of sheep still remains 15.3 % below that of 1922.

The number of pigs increased constantly from 1922 to 1928; since the latter year, very marked fluctuations have occurred; from 1928 to 1929 there was a reduction of 28.6 % and from 1929 to 1930, an increase of 36.8 % which continued at nearly the same rate from 1930 to 1931 (+ 36.2 %). In 1932 a decrease of 18.3 % was recorded.

### Number of pigs in the Netherlands.

There exists in the Netherlands a special organization to assist pig breeders under the Pig Crisis Law. This organization has, during September and October 1932, caused to be marked all pigs belonging to its members, who own practically all of the pigs in the country. The enumeration results are as follows:

	(Head)
Boars for breeding purposes . . . . .	10,103
Sows for breeding purposes . . . . .	264,794
Sucking pig (under 6 months of age) . . . . .	534,584
Young pigs under 60 kg. in weight . . . . .	1,011,543
Pigs 60 to 100 kg. in weight . . . . .	624,142
Pigs over 100 kg. . . . .	289,818

Total (including 749 unspecified pigs) . . . 2,735,733

The census of June 1930 indicated 2,017,319 pigs but, in comparing the two figures, the following points must be taken into account:

(1) The number of pigs, especially of heavier animals, is always larger in September than in June. In 1930, according to the data published quarterly regarding the movement of livestock on 700 farms, the difference amounted to 10 %.

(2) According to the data of the 1932 enumeration, no count was taken in 1930 of pigs on all of the farms: in 1930 the census was effected for 229,000 persons, in 1932 for 306,500 members of the organisation created under the law mentioned above. Even when it is taken into consideration that the great

majority of the persons not included in 1930 are small producers it may be, very prudently, estimated that the pigs omitted in this way represent 10 % of the total.

(3) A more exact comparison of the data of the two censuses shows that in 1930 there must have been frequent underestimations in the recording of pig numbers. These errors are due to the fact that in many cases there was no real census, especially in localities more distant from populous centres. An addition of at least 10 % may be regarded as necessary in this case also.

(4) The census of 1930 was carried out in a single day determined according to locality. The enumeration of 1932 included also pigs littered at a later date. Taking into account the fact that on the other hand a number of pigs that would have been enumerated under the 1930 system had in September been slaughtered a difference of 135,000 is obtained.

In short, the following figures are obtained : the number of pigs on a given day in September 1932 was 2,735,000 less 135,000, equivalent to 2,600,000, while that in September 1930 was 2,017,000 plus 30 %, equivalent to 2,622,000.

Although the number in 1932 was a little lower than in 1930 account must also be taken of a somewhat unfavourable factor, namely, that in September 1930 brood sows formed only 8.7 % of the total while in September 1932 they formed 9.7 % ; thus, if no special measures are taken, the number of pigs in the first half of 1933 should be at least as great as in the same period of 1931, when, according to the quarterly estimates, it was much higher than in 1930 (on 1 June 1931 it was 117 % of the number on 1 June 1930 and on 1 March 1931 it was 112 %).

### Livestock in Brazil.

In the following table are given the numbers of livestock in Brazil according to the estimates of 1932, compared with the corresponding figures of the 1920 Censuses.

	Estimate 1932	Census 1920
	(head)	
<i>Horses</i> . . . . .	6,573,329	5,253,699
<i>Asses and mules</i> . . . . .	2,745,021	1,865,259
<i>Cattle</i> . . . . .	42,539,203	31,271,324
<i>Sheep</i> . . . . .	10,660,598	7,933,437
<i>Goats</i> . . . . .	5,231,455	5,086,655
<i>Pigs</i> . . . . .	21,614,622	16,168,549

An increase is noted for all kinds of animals varying from a minimum of + 2.8 % for goats to a maximum of + 47.2 % for asses and mules. The order of importance of increase is : sheep (+ 34.4 %), pigs (+ 33.7 %), horses (+ 25.1 %) and cattle (+ 24.1 %).

### Livestock on farms in the United States.

According to the Farm Outlook Report published by the Department of Agriculture on 30 January, the supply of meat animals on farms in January 1933 in terms of total live weight of cattle and calves, sheep and hogs, is reported to have been larger than on that date a year ago. The larger numbers of cattle and calves more than offset a decrease in sheep and there was little change in the numbers of hogs. The supply of meat animals has gradually increased during the last five years and is now about 10 % larger than in 1928. Although livestock on farms in the United States increased 2 % in number last year, its value, shrank 17 %. Moreover, by far the larger part of the reduction in farm income this year was in livestock and livestock products, the biggest shrinkage in this group being noted in returns from cattle, hogs and sheep.

The total number of all cattle in January 1933 was 3.9 % larger than on 1 January 1932, and was the largest recorded since 1923; the number of cows and heifers two years old and over kept for milk, included in the total for all cattle, was 2.7 % larger; and that of yearling heifers being kept for milk cows decreased about 1 % during 1932 from 4,685,000 head to 4,641,000 head. It is noted that the number of beef and dairy cows is the largest on record.

(Thousand head)

YEAR 1)	Horses and horse colts	Mules and mule colts	Cattle and calves		Sheep and lambs 3)	* Swine including pigs
			Total	of which cows and heifers 2)		
1932	12,163	4,981	65,129	25,136	51,630	60,716
1931	12,641	5,089	62,656	24,469	53,321	59,078
1930	13,169	5,226	60,987	23,576	52,599	54,399
1929	13,684	5,366	59,730	22,510	51,383	55,301
1928	14,203	5,496	57,878	22,330	48,249	58,789
1927	14,768	5,647	56,701	22,129	45,121	61,772
1926	15,368	5,801	57,528	22,159	42,302	55,468
1925	16,067	5,903	59,977	22,311	40,183	52,082
1924	16,640	5,918	63,115	22,505	38,393	55,770
1923	17,365	5,908	65,832	22,288	37,020	66,576
1922	18,123	5,895	67,384	22,099	36,695	69,304

1) 1 January of the year after that given in the table (1 Jan. 1933, Jan. 1932, etc.).

2) 2 years old and over kept for milk.

3) Including estimates of sheep and lambs on feed for market as well as on farms.

As regards the 1932-33 season the livestock feeding situation is characterized by large supplies of home-grown feed grains, slightly below average supplies of hay, no acute shortage of feed in any large area and extremely low prices for feed crops. Slaughter supplies of cattle and calves this year are expected to somewhat larger than in 1932; in fact there was an increase of about 5 % in the number of cattle on feed in the eleven Corn Belt States on 1 January 1933 compared with 1 January 1932 but the Department of Agriculture states that total slaughter is not likely to be sufficient to prevent a further increase in the number on farms at the beginning of 1934. This is interesting in view of the fact that a

shift from consumption of beef and veal to consumption of pork, lard and lamb was reported to have taken place in the first eight months of 1932.

In connection with the fact that the number of beef and dairy cows has reached a record high level, it is interesting to note that the Department of Agriculture states that dairy products have assumed first place in the amount of gross farm income, a position formerly held by cattle, hogs and sheep as a group.

Some indication of the situation of supplies and prices of beef, veal and butterfat in the past year may be obtained from the following summary :

	Thousand head slaughtered under Federal inspection		Average prices received by producers (1)		
	Oxen	Calves	Beef \$ per 100 lb	Veal \$ per 100 lb	Butterfat cents per lb
1932 . . . . .	2) 7,058	2) 4,167	4 06	4.99	18,1
1931 . . . . .	9,108	4,717	5 38	7.03	25 3
1930 . . . . .	8,170	4,595	7 55	9 90	35 0

1) Simple average of monthly prices

2) Figure for 11 months, corresponding figures for 1931: cattle 7,422,000 head; calves 4,328,000 head

#### *Fall in average prices.*

	Beef cattle	Veal calves	Butterfat
From 1930 to 1931 . . . . .	28 7 %	29.0 %	27 7 %
From 1931 to 1932 . . . . .	24.5 %	29 0 %	28 5, %

Prices of dairy products again fell sharply during 1932 but prices of butterfat, for example, in relation to other agricultural products, continue relatively high. Production of dairy products in 1932 was somewhat smaller than in 1931 and the lower level of stocks at the end of the year was also a strengthening factor.

The number of hogs continued the upward trend noted since 1930, the total number on 1 January 1933 exceeding that on the same date of 1932 by 2.8 %. The average corn-hog ratio again rose to 12.35 and feeding was consequently favoured as hog prices during 1932 once more fell relatively less than maize prices.

Income from hogs however representing about 21 % of the total gross income for livestock and livestock products was, more severely reduced than that of any other of the livestock and livestock products.

Slaughter of hogs was slightly larger than in 1931 although due to the decrease in the spring pig crop of 1932 there was a tendency to reduced slaughter toward the end of the year and on 1 January 1933 the total number of hogs was not much different from that of a year earlier, showing only a slight increase.

Toward the end of 1932, as feed supplies were plentiful and prices low, there was a tendency to feed animals larger for later marketing at heavier weights. Earlier in the year the tendency had been to market hogs at lighter weights. For the first eleven months of 1932 the total dressed weight of hogs slaughtered was only slightly larger than in the same period of 1931 but below the five-year average.

YEAR	Number of hogs (thousand head) 1)	Slaughtering under F. I. (thousands)	Average price of hogs received by producers (dollars per 100 lb) 2)	Average price of maize received by producers (cents per bushel) 2)	Number of bushels of corn equal in value to 100 lb. of hogs
1932 . . . . .	60,716	45,245	3.47	28.1	12.35
1931 . . . . .	56,078	44,772	5.89	49.8	11.8
1930 . . . . .	54,399	44,266	8.82	78.0	11.3
1929 . . . . .	53,301	48,445	9.44	78.6	10.8
1928 . . . . .	58,789	49,795	8.75	89.1	9.8
1927 . . . . .	61,772	43,633	9.68	78.8	12.3
1926 . . . . .	55,468	40,636	11.80	69.9	16.9
1925 . . . . .	52,082	43,043	11.00	99.9	11.0
1924 . . . . .	55,770	52,873	7.48	91.2	8.2
1923 . . . . .	66,576	53,334	7.13	80.2	8.9
1922 . . . . .	69,304	43,114	8.40	59.6	14.1

1) On 1 January of the year after that given in the table 1 (January 1933, 1 January 1932, etc.). — 2) Simple average of monthly prices.

According to the Annual Outlook Report, slaughter of hogs under Federal inspection during the remainder of the present marketing year, which ends on 30 September 1933, is expected to be somewhat smaller than in the corresponding period of 1932, with all the reduction occurring during the four months January to April. But the decrease in numbers is expected to be partly offset by an increase in average weights. Little increase in the 1933 spring pig crop is indicated and domestic demand for pig products is not anticipated to improve materially.

The number of sheep on 1 January 1933 showed a decrease of 3.2 %, compared with the previous year after a continuous increase during the past decade. Slaughter during 1932 was a little larger than in the previous year and the reduction of 8 % in the lamb crop together with heavy death losses at the beginning of the year caused a material decrease in numbers on 1 January 1933. The number of sheep and lambs on feed for market in the principal feeding States on 1 January 1933 was 5,239,000 head or 15 % less than the number recorded a year earlier (6,135,000). The average price received by producers in 1932 for sheep was 2.39 dollars per 100 lb. compared with 3.37 in 1931; the corresponding average prices for lambs were 1932 : 4.41, and 1931 : 5.78 dollars per 100 lb. Due to unfavourable weather and feed conditions and losses of aged ewes in the winter of 1931-32, the 1932 wool clip was smaller but world wool production continued high. The average price received by producers in the United States for wool in 1932 was 9.7 cents per lb. compared with 14.2 in 1931.

The number of horses on farms has continued to decrease and on 1 January 1933 showed a decrease of 3.8 % compared with the previous year. Mules decreased by 2.1 % over the same period. Although the average prices received by producers for horses and mules in 1932 were somewhat lower than in 1931, the respective values per head at the beginning of 1933 differed very little from those of a year before, this being in sharp contrast to other kinds of livestock and representing an encouraging feature. Farmers have again been urged to purchase young breeding stock for replacement purposes in view of a probable shortage of such animals.

## Poultry in the United States.

The average number of hens and pullets of laying age reported in farm flocks on 1 February, was 86.4, this being 2.5 % more than on that date last year (84.3) but about 3.5 % less than the February average of the years 1927-31. Marketings of hens in January were somewhat heavier than in that month last year but a larger number of late-hatched pullets than usual entered the laying flocks, leaving relative numbers of layers on hand compared with last year unchanged at the end of the month.

The generally warm open weather of January resulted in unusually heavy layings, and the number of eggs laid per hundred birds on 1 February was the greatest for that date for nine years. The number of eggs laid on 1 February per hundred hens and pullets of laying age was 30.7 compared with 28 eggs per hen last year and a five-year average of 23.2 for that date.

## Dairy production in the Netherlands.

As, before 1932, there existed no exact figures of the production of condensed or dried milk, there have been published in the following table the figures of exports, which reflect fairly exactly those of production since consumption in the country is rather small. The figures of exports are expressed in terms of gross weight.

DESCRIPTION	1932	1931	1930	1929	1928	1927	1926
	thousand pounds						
<i>Production.</i>							
Butter under State control . . .	175,919	174,394	178,354	176,886	171,996	170,638	165,189
Butter manufactured under special control in the margarine factories . . . . .	—	724	873	899	689	895	1,070
Butter not controlled (not exportable) . . . . .	11,947	11,806	13,109	13,389	15,340	16,105	17,461
Cheese under State control . . . .	257,966	285,978	293,843	288,790	281,355	262,882	255,011
Cheese not controlled (not exportable) . . . . .	5,459	6,863	8,051	8,404	10,002	14,789	15,002
<i>Export:</i>							
Butter . . . . .	44,924	72,660	92,395	104,325	103,488	105,716	100,430
Cheese . . . . .	170,061	190,460	206,518	211,237	203,032	214,568	185,709
Sweetened condensed whole milk . .	61,595	67,669	78,355	72,929	62,953	63,645	58,418
"    "    skim milk. . . . .	297,596	298,716	275,980	269,818	266,815	243,398	221,526
Unsweetened evaporated whole milk . . . . .	37,732	49,055	38,742	235,098	24,172	17,679	13,036
Whole milk powder . . . . .	245	18,257	18,493	22,714	25,280	23,664	19,182
Skim milk powder . . . . .	14,861	11,105	13,644	11,632	8,281	6,993	7,302
Sterilized milk, cream, etc. . . .	3,541	7,776	6,660	10,812	10,750	9,376	7,734

For 1932 there have been published for the first time, the following data on output of dairy products (net weight).

	(ooo lb.)
Condensed milk. . . . .	255,447
Skim milk powder . . . . .	13,970
Milk partly skimmed, powder . . . . .	274
Milk powder with 24 % of fat . . . . .	16,926
Cream powder . . . . .	82
Pasteurized milk . . . . .	3,482
Pasteurized cream . . . . .	542
Sterilized cream. . . . .	174

Below are given the quantities of milk converted into condensed milk and powder in the year 1932 compared with those of 1931.

	1932 (ooo lb.)	1931
Skim milk converted to condensed milk . .	643,752	630,524
Other milk converted to condensed milk. .	179,677	134,482
Skim milk converted to powder . . . . .	152,119	160,938
Other milk converted to powder . . . . .	154,324	147,710

### Dairy production in the United States.

The preliminary figures of production in 1932 of some of the chief dairy products compared with the data for 1931, are given in the following summary :

#### *Production (in million lb.).*

	1932	1931
Creamery butter (1) . . . . .	1,055	1,667
Farm butter . . . . .	550	560
Cheese . . . . .	164	192
Condensed milk . . . . .	221	285
Evaporated milk .		
case goods . . . . .	1,513	1,429
bulk goods . . . . .	...	255
<i>Total milk equivalent.</i> . . . .	55,288	55,987

(1) Including whey butter, production of which in 1930 amounted to 3,770,000 lb

These figures indicate a decrease of 1.0 % in total butter production compared with 1931 and a relatively larger decrease of 5.7 % in that of cheese. The condensed milk output has declined to the extent of 22.5 % but that of evaporated milk, if case goods only are considered and bulk goods excluded, has increased by 5.9 %.

The total milk equivalent of the above dairy production shows a decrease of 1.3 %.

Milk production per cow on February 1 as reported by crop correspondents of the Department of Agriculture, showed more than the usual increase during January but was one per cent lower than on the same date last year.

The quantity of grain fed per milk cow was about the same as on February 1 of last year.

### The International Butter Trade in 1932.

The abundance of the quantities of butter offered on the world market, especially by the overseas exporting countries, which have constantly increased their production, the reduction in the demand for foreign butter in most of the importing countries, where production has, in general, also increased in recent years and where the economic crisis has, in many cases, restricted consumption, new customs regulations (fixing of import quotas, increase of customs duties) introduced in many of these countries in order to restrict their imports and protect their home markets — all of these circumstances have contributed to bring about a very sharp fall in butter prices.

The following table, showing for 1931 and 1932 the average prices per quintal of the quantities received each month in the two most important importing countries reveals the continuity and the gravity of this fall.

*Average prices of imported butter in gold francs per quintal.*

	Great Britain		Germany	
	1931	1932	1931	1932
January . . . . .	280	185	317	204
February . . . . .	306	195	318	214
March . . . . .	315	205	320	222
April . . . . .	280	198	291	204
May . . . . .	274	174	271	200
June . . . . .	276	166	274	185
July . . . . .	272	167	264	178
August . . . . .	274	167	264	174
September . . . . .	—	174	260	166
October . . . . .	236	167	239	174
November . . . . .	221	163	234	176
December . . . . .	193	151	217	166
Yearly average . . .	267	176	272	188

The volume of international trade in 1932 was, however, less than in 1931.

In fact, the world butter trade, the volume of which has increased gradually during recent years, in 1932 registered a decrease, which, for the thirteen most important exporting countries, amounts to 4 %.



Whereas the exports of the large overseas surplus-producing countries, which have constantly increased since 1928, increased by a further 14 % in 1932, those of the European countries have fallen by 16 %. The proportion of New Zealand, Australian and Argentine butter out of the total quantities placed on the world market by all of the countries considered therefore continues to increase ; it has risen from 30 % in 1929 to 34 % in 1930, 38 % in 1931 and 45 % in 1932.

*Export of butter from the principal exporting countries*

(thousand pounds).

COUNTRIES	1932	1931	1930	1929	1928
Denmark . . . . .	347,886	378,429	372,558	350,620	325,714
Netherlands . . . . .	44,926	72,660	92,394	104,325	103,488
Irish Free State . . . . .	36,932	42,307	58,767	62,797	63,623
Sweden . . . . .	29,875	43,045	58,806	54,961	38,680
Finland . . . . .	32,020	38,367	37,726	36,610	29,489
Estonia . . . . .	27,626	31,844	31,010	27,247	24,740
Latvia . . . . .	41,000	41,313	40,631	32,695	28,673
Lithuania . . . . .	21,883	19,191	16,219	9,004	5,827
Poland . . . . .	2,707	27,470	26,714	33,248	24,194
<i>Total Europe . . . . .</i>	<i>584,855</i>	<i>694,626</i>	<i>734,825</i>	<i>711,507</i>	<i>643,428</i>
U. S. S. R. . . . .	68,198	68,024	23,197	55,934	71,891
New Zealand . . . . .	244,588	220,514	211,034	185,226	162,351
Australia . . . . .	229,105	191,016	126,601	102,914	112,813
Argentina . . . . .	55,973	51,167	51,156	37,547	44,183
<i>Total, Overseas Countries . . . . .</i>	<i>529,666</i>	<i>462,697</i>	<i>388,791</i>	<i>325,687</i>	<i>319,347</i>
<b>GENERAL TOTAL . . . . .</b>	<b>1,182,719</b>	<b>1,225,347</b>	<b>1,146,813</b>	<b>1,093,128</b>	<b>1,034,666</b>

The extent to which the exports of the different European countries have contributed to the total reduction shows, moreover, very great differences.

The exports of the U. S. S. R., Latvia and Lithuania in 1932 remained nearly the same as in 1931. The smallest reduction was recorded by Denmark, reaching, however, 8 % ; Estonia and the Irish Free State experienced a decrease of 13 %, Finland 17 %, Sweden 31 %, the Netherlands 38 % and Poland as much as 90 %.

In general, it may be said that the reductions have been less appreciable for the countries exporting principally to the English market and larger for those having as their principal markets Germany and the other importing countries.

Great Britain and Northern Ireland increased its total imports by 6 % but the countries that principally benefited were almost exclusively Australia, New Zealand and Argentina ; these three countries together placed on the English market about 60 million pounds (or 14 %) more than in 1931. Denmark also increased, but to a much smaller extent (5 %), its shipments to

this market. The total imports of other origin decreased by about 16 %, the reductions of imports from the Netherlands (— 51 %), Estonia (— 34 %), the U. S. S. R. (— 20 %), the Irish Free State and Sweden (— 17 %) being particularly large.

*Import of butter into the principal importing countries*

(thousand pounds)

COUNTRIES	1932	1931	1930	1929	1928
Great Britain and Northern Ireland 1) . . . .	911,844	863,362	744,870	707,748	666,228
Germany . . . . .	153,264	220,950	293,562	298,824	279,003
Belgium-Luxemburg . . . . .	46,778	41,562	22,635	9,559	2,899
France . . . . .	26,140	40,836	12,924	9,753	5,758
Switzerland . . . . .	8,151	23,358	18,797	16,649	18,063
Canada . . . . .	238	2,822	38,605	35,929	16,801
TOTAL . . . . .	1,146,415	1,192,890	1,131,393	1,073,462	988,752

1) Re-exports have been deducted.

Germany, following on the contingent of imports, reduced its purchases from abroad by 31 %. The majority of the countries supplying the German market had to restrict their shipments, though to very varying degrees, owing to the application of differential duties. The decrease amounted to 89 % for Poland, 57 % for Denmark, 45 % for the Netherlands and 42 % for Sweden ; it was less for Finland (26 %) and Latvia (23 %), and almost nil for Estonia, while imports from Lithuania and from the U. S. S. R. showed a relatively marked increase. Overseas butter plays only a secondary part on the German market ; there was, however, in 1932 an increase in imports from New Zealand and from Argentina outweighing the decrease in those from Australia.

France, formerly predominantly an exporter but which in 1931 experienced a heavy increase in imports, fixed an import quota in 1932 and raised its import duties to a high level. It took 35 % less from foreign countries than in 1931 ; imports from Denmark were reduced by about two-thirds and those from the Netherlands by about one-third but those from Argentina were doubled.

In Switzerland, where the Government encouraged production of butter in consequence of the difficulties in exporting cheese, imports were only about one-third of those in 1931.

Belgium, on the other hand, increased its imports by 13 % ; this increase benefited Denmark principally, the quantities placed on the Belgian market by the Netherlands, the Baltic States and Poland having been less than in 1931.

### Current information on livestock and derivatives.

*Irish Free State* : In February ample supplies of fodder roots and grain were available to meet all requirements. Milk yields were above average for the time of year.

*France* : The mild, damp weather that has predominated this winter with short intervals of severe cold has permitted abundant milk production.

*Great Britain and Northern Ireland* . The feed situation is on the whole satisfactory. In England and Wales considerable demands were made in February on winter keep but it was not anticipated that any shortage would result. In Scotland supplies of roots were becoming short in some districts, a considerable proportion of the crops having been frosted; supplies of hay and straw were, however, plentiful and of good quality; available supplies of concentrated foods were ample for requirements but wheat continued to be scarce and high in price as compared with other feedingstuffs. In Northern Ireland supplies of all classes of feedingstuffs continued to be fairly plentiful and the tendency to feed homegrown feeds in greater quantities appeared to be general.

In Northern Ireland the general condition of store cattle was satisfactory and, despite the severe weather, both outliers and stall-fed animals thrive well. Their health was also well maintained, especially where outliers were adequately hand-fed. Reports indicate that the number of stall-fed animals is slightly greater than a year ago. Dairy stock were in sound condition.

The milk yield was somewhat below normal in some parts of England and Wales and of Scotland but in Northern Ireland was only seasonally low and increased toward the end of the month.

*Netherlands* : Purchases of concentrated feed have decreased very considerably but farmers have also at their disposal other fodder such as silage hay, fodder roots potatoes, etc. The quantities of hay available are not, however, very abundant. The number of stall-fed dairy cattle is rather larger than last year; milk production remains nearly normal.

*Switzerland* . According to an enquiry by the *Union Suisse des paysans* on 15 February 1933 there has been a sensible decline in the rearing and fattening of pigs. The changes are as follows, expressed in percentages :

	Decrease	
	1 July 1932 to 1 November 1933	8 November 1932 15 February 1933
Brood sows . . . . .	11	8
Young pigs up to 2 months old . . . . .	7	9
Young pigs over 2 months old . . . . .	1	8
Pigs for fattening . . . . .	4	7

*Argentina* : Health of livestock was generally satisfactory save in some northern districts where pasture suffered seriously from lack of moisture.

*United States* : In the week ended on 28 February stock water became scarce in parts of the southern Great Plains, with roughage scarce in many localities. In the Northern Great Plains mild, pleasant weather diminished the snow-cover and allowed livestock to range freely. In the Rocky Mountain region, some additional ranges were open, but much feeding was still necessary, while in the eastern Great Basin, crusted snow was unfavourable for sheep. Range and livestock condition was fair to good in the Southwest, while in the far Northwest the weather had recently been more favourable.

*Algeria* : Health and condition of stock was good. Lambing took place under good conditions so that a partial reconstitution of flocks may be expected.

Markets recovered a certain liveliness and prices are firm.

*French Morocco* : Health was good but condition, though improved, still left much to be desired at the beginning of February.

*Union of South Africa* : During January droughty conditions with but little relief prevailed practically throughout the Union. The northern portion of the eastern Transvaal lowveld did, however, enjoy satisfactory rainfall; stock and grazing were there making a remarkable recovery but the outbreak of foot-and-mouth disease in Bechuanaland was causing much anxiety in the northern and western Transvaal. In the Cape northwestern districts the position was critical, whole areas being in process of evacuation and trek sheep pouring into the Karroo from the drought-stricken districts; unfortunately the Karroo and the Eastern Province were also experiencing a period of drought and though stock and veld were still in fairly good condition the grazing resources of these areas were expected to be heavily taxed unless early and general rains fell. In the south of the Orange Free State and in Griqualand West heavy losses of stock through the effects of the drought and *dikkopsiekte* but reports were conflicting and comments were even made on the remarkably good condition of some flocks, these areas had certainly been afflicted by a long period of drought but the condition of stock appears to be largely dependent on pastoral management and water supply. The northern districts of the Orange Free State and the Transvaal Highveld had also suffered from the irregular rainfall; although cattle were poor in condition sheep were healthy and had stood the drought well; an adequate water-supply had, however, become a serious problem as a result of the low rainfall of the past three seasons. Natal had been the most favoured of all the provinces of the Union, the rainfall of the Highveld had also been limited during the month but veld and stock were in excellent condition.

## LATEST INFORMATION.

*Argentina* (Telegram of 23 March). — Excessive rain has been unfavourable to maize harvesting, which has now begun; quality is satisfactory and quantity normal.

*United States* : According to the final ginning report issued by the Bureau of the Census, the total quantity of cotton, not including linters, ginned from the 1932-33 crop, amounts to 12,703,000 running bales, counting round bales as

half bales, equivalent to 12,995,000 bales of 500 pounds gross-weight, as against 16,629,000 running bales and 17,096,000 equivalent 500 pound bales in 1931-32, 13,756,000 running bales and 13,932,00 bales of 500 lb. in 1930-31; 14,548,000 and 14,825,000 in 1929-30; 14,297,00 and 14,478,000 in 1928-29; 12,783,000 and 12,956,000 in 1927-28

The average gross weight of the running bales for 1932-33, counting round bales as half bales and excluding linters, is 511.5 lb., as against 514.0 in 1931-32, 506.4 in 1930-31, 509.5 in 1929-30, 506.3 in 1928-29 and 506.8 in 1927-28.

## TRADE

COUNTRIES	JANUARY				SIX MONTHS (August 1-January 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat. — Thousand centals (1 cental = 100 lb.)</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	37	421	0	0	1,171	3,366	0	0	5,688	0
Hungary . . . . .	137	273	0	0	1,616	8,697	0	0	7,912	0
Lithuania . . . . .	0	0	0	0	0	2	0	0	20	0
Poland . . . . .	9	51	123	62	90	271	406	324	1,598	346
Rumania . . . . .	0	273	0	0	24	19,235	4	4	21,202	7
U. S. S. R. . . . .	699	1,332	0	0	10,551	38,757	1,373	0	39,423	1,515
Yugoslavia . . . . .	68	370	0	0	498	6,662	0	0	8,796	0
Canada . . . . .	8,825	5,684	2	2	93,062	62,671	26	49	109,685	75
United States . . . . .	1,076	2,445	481	761	10,640	30,402	2,831	4,458	52,805	7,361
Argentina . . . . .	9,456	8,633	—	—	21,956	27,549	—	—	81,463	—
Chile . . . . .	—	—	—	—	4	2	302	0	9	0
Turkey . . . . .	9	95	0	0	57	362	0	0	913	0
Algeria . . . . .	—	—	—	—	3,521	1,501	558	822	4,837	1,462
Tunis . . . . .	128	40	62	64	2,335	1,579	302	260	5,337	401
Australia . . . . .	11,865	10,333	0	0	28,592	26,636	0	0	73,793	0
<i>Importing Countries:</i>										
Germany . . . . .	1,592	631	1,191	1,581	10,878	6,918	9,938	8,814	7,313	21,006
Austria . . . . .	0	0	600	714	0	0	2,930	3,755	0	6,418
Belgium . . . . .	26	161	1,883	1,689	866	2,125	12,811	16,109	3,587	31,478
Denmark . . . . .	0	0	381	456	13	9	3,536	5,851	9	8,719
Spain . . . . .	0	0	0	0	0	0	0	35	0	6,482
Estonia . . . . .	0	0	0	13	0	0	0	152	0	256
Irish Free State . . . . .	0	7	390	304	4	7	3,660	3,311	13	6,369
Finland . . . . .	0	0	18	26	0	0	500	236	0	428
France . . . . .	2	0	1,155	1,755	46	9	14,824	22,117	9	53,140
Gr. Brit. and N. Irel. . . . .	46	18	9,118	5,758	214	258	58,551	74,552	1,206	137,664
Greece . . . . .	0	0	926	983	0	0	5,964	6,878	0	14,116
Italy . . . . .	0	0	1,215	1,093	13	18	5,324	4,462	18	22,547
Latvia . . . . .	0	0	0	20	2	0	15	267	0	575
Norway . . . . .	0	0	267	271	0	0	1,689	1,773	0	3,294
Netherlands . . . . .	26	46	1,559	1,605	467	77	8,364	9,544	110	17,919
Portugal . . . . .	—	—	42	4	—	—	265	472	—	1,393
Sweden . . . . .	0	0	126	375	9	0	1,415	1,956	9	4,054
Switzerland . . . . .	2	2	853	983	13	4	6,195	7,513	18	12,683
Czechoslovakia . . . . .	0	0	434	809	2	2	977	7,416	4	13,199
India . . . . .	4	11	0	0	29	157	0	179	183	179
Japan . . . . .	—	—	703	1,268	—	—	4,533	5,710	—	17,070
Syria and Lebanon . . . . .	—	—	—	—	243	392	68	7	511	328
Egypt . . . . .	—	—	—	—	2	2	0	106	2	994
Union of South Africa . . . . .	—	—	—	—	0	0	128	500	2	1,034
New Zealand . . . . .	—	—	—	—	0	0	406	15	0	258
<b>Totals . . . . .</b>	<b>34,007</b>	<b>30,826</b>	<b>21,529</b>	<b>20,596</b>	<b>186,918</b>	<b>235,464</b>	<b>147,895</b>	<b>187,647</b>	<b>426,475</b>	<b>392,770</b>
<b>Rye. — Thousand centals (1 cental = 100 lb.)</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	0	64	0	0	49	882	0	0	990	0
Hungary . . . . .	33	33	0	0	472	807	0	0	1,486	0
Lithuania . . . . .	0	0	0	0	2	0	0	2	9	2
Poland . . . . .	459	97	60	24	3,832	1,146	203	121	2,513	123
Rumania . . . . .	0	40	0	0	9	1,459	0	0	1,678	0
U. S. S. R. . . . .	269	1,442	—	—	3,748	19,357	—	—	23,640	—
Canada . . . . .	9	123	0	0	1,435	1,629	0	0	5,066	0
United States . . . . .	0	4	—	—	18	29	—	—	622	—
Argentina . . . . .	154	487	—	—	306	1,023	—	—	4,769	—
Turkey . . . . .	20	51	0	0	185	344	0	0	690	0
Algeria . . . . .	—	—	—	—	11	9	0	0	31	0
<i>Importing Countries:</i>										
Germany . . . . .	511	159	386	328	2,310	1,962	4,398	2,202	2,046	12,103
Austria . . . . .	0	0	2	62	0	0	112	818	0	1,728
Belgium . . . . .	26	51	278	99	172	267	1,561	1,250	639	2,709
Denmark . . . . .	0	0	342	161	0	0	3,589	2,853	0	4,731
Estonia . . . . .	0	0	0	0	0	0	0	7	0	13
Finland . . . . .	0	0	2	31	0	0	659	315	0	1,202
France . . . . .	0	0	35	117	0	0	302	886	0	1,737
Italy . . . . .	0	0	29	7	0	0	172	64	0	157
Latvia . . . . .	0	0	0	0	0	0	0	57	0	99
Norway . . . . .	0	0	267	282	0	0	1,523	2,072	—	3,415
Netherlands . . . . .	2	93	254	262	35	245	2,258	2,130	331	4,193
Sweden . . . . .	0	0	2	104	0	0	245	608	26	1,334
Switzerland . . . . .	0	0	20	4	0	0	207	46	0	108
Czechoslovakia . . . . .	0	0	2	243	49	4	90	3,898	7	5,124
<b>Totals . . . . .</b>	<b>1,483</b>	<b>2,644</b>	<b>1,679</b>	<b>1,731</b>	<b>12,633</b>	<b>29,163</b>	<b>15,319</b>	<b>17,329</b>	<b>44,543</b>	<b>38,778</b>

COUNTRIES	JANUARY				SIX MONTHS (August 1-January 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat flour. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Germany . . . . .	331	9	4	22	761	42	33	101	64	229
Belgium . . . . .	9	4	9	2	33	35	51	37	73	51
Bulgaria . . . . .	0	40	0	0	46	357	0	0	752	0
Spain . . . . .	0	0	0	0	2	13	0	0	18	0
France . . . . .	335	238	42	18	1,856	3,272	262	134	4,764	262
Hungary . . . . .	42	97	0	0	597	1,470	0	0	2,130	0
Italy . . . . .	163	187	26	29	2,090	1,268	139	163	2,235	287
Latvia . . . . .	0	0	0	0	0	0	0	0	0	0
Lithuania . . . . .	2	2	0	0	11	15	0	0	26	0
Poland . . . . .	26	31	0	0	146	359	0	4	511	4
Rumania . . . . .	0	60	0	0	9	772	0	0	855	0
Yugoslavia . . . . .	7	2	0	0	42	53	0	0	104	0
Canada . . . . .	778	650	7	4	5,313	5,677	15	22	10,551	46
United States . . . . .	635	1,693	0	0	4,621	9,310	0	0	15,091	0
Argentina . . . . .	117	117	—	—	536	818	—	—	1,545	—
Chile . . . . .	—	—	—	—	4	7	55	0	29	0
India . . . . .	22	60	0	0	218	463	2	0	836	0
Turkey . . . . .	0	0	0	0	0	0	0	4	11	4
Japan . . . . .	520	179	0	7	2,901	1,144	9	66	3,470	106
Algeria . . . . .	—	—	—	—	214	44	26	37	157	57
Tunis . . . . .	15	7	4	2	90	62	13	13	146	20
Australia . . . . .	785	1,045	0	0	5,540	7,494	0	0	13,995	0
<i>Importing Countries:</i>										
Austria . . . . .	0	0	46	79	0	7	340	582	7	1,279
Denmark . . . . .	0	0	60	88	9	7	410	763	13	1,290
Estonia . . . . .	0	0	0	0	0	9	0	13	11	15
Irish Free State . . . . .	0	4	106	238	0	18	1,080	1,942	26	4,048
Finland . . . . .	0	0	71	49	0	0	639	1,003	0	1,596
Gr. Brit. and N. Irel. . . . .	256	381	642	683	2,341	2,624	4,262	5,990	5,628	11,224
Greece . . . . .	0	0	2	2	0	0	15	49	0	66
Norway . . . . .	0	0	60	64	2	7	529	825	11	1,358
Netherlands . . . . .	2	2	86	46	18	40	445	441	71	723
Portugal . . . . .	—	—	0	0	—	—	143	86	—	201
Sweden . . . . .	0	0	0	4	0	0	7	22	0	37
Czechoslovakia . . . . .	0	0	86	49	4	4	214	562	9	1,182
Ceylon . . . . .	—	—	42	53	—	—	243	245	—	401
Java and Madura . . . . .	—	—	—	—	—	—	417	540	—	1,138
Indo-China . . . . .	—	—	22	29	—	—	169	203	—	388
Syria and Lebanon . . . . .	—	—	—	—	42	68	183	128	93	397
Egypt . . . . .	—	—	—	—	0	0	117	1,177	0	2,430
Union of South Africa . . . . .	—	—	—	—	0	2	2	2	2	15
New Zealand . . . . .	—	—	—	—	0	2	90	71	4	238
Totals . . . . .	4,045	4,808	1,315	1,468	27,446	35,461	9,910	15,230	63,238	29,086
<b>Barley. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	0	20	0	0	60	395	0	0	406	0
Spain . . . . .	2	0	0	0	15	4	0	0	15	0
Hungary . . . . .	57	0	0	0	620	44	0	0	55	7
Lithuania . . . . .	0	0	0	0	2	0	0	0	0	0
Poland . . . . .	386	223	0	0	2,553	2,328	0	0	3,146	0
Rumania . . . . .	42	441	0	0	8,658	13,012	0	0	15,913	0
Czechoslovakia . . . . .	168	68	0	0	2,767	922	2	2	2,112	2
U. S. S. R. . . . .	714	1,241	—	—	7,075	16,367	—	—	17,789	—
Canada . . . . .	93	110	0	0	2,039	3,759	0	0	6,499	0
United States . . . . .	470	53	—	—	2,663	1,389	—	—	2,524	—
Argentina . . . . .	1,296	1,627	—	—	1,552	2,103	—	—	6,274	—
Chile . . . . .	—	—	—	—	4	60	0	0	492	0
India . . . . .	0	40	0	0	4	223	0	0	666	0
Syria and Lebanon . . . . .	—	—	—	—	31	351	152	46	384	104
Turkey . . . . .	29	408	0	0	536	1,942	0	0	2,996	0
Egypt . . . . .	—	—	—	—	4	0	2	187	2	273
Tunis . . . . .	121	2	2	20	2,070	121	29	487	820	556
Australia . . . . .	152	364	0	0	309	672	0	0	1,614	0
<i>Importing Countries:</i>										
Germany . . . . .	0	2	225	1,259	2	11	1,581	8,042	18	15,970
Austria . . . . .	0	0	143	170	0	0	1,012	1,369	0	2,075
Belgium . . . . .	115	152	551	871	849	836	5,538	5,878	1,676	9,396
Denmark . . . . .	7	86	119	55	205	351	1,202	2,114	474	3,331
Irish Free State . . . . .	0	0	0	172	2	22	9	231	26	483
France . . . . .	0	0	597	800	29	9	5,326	5,307	15	9,482
Gr. Brit. and N. Irel. . . . .	4	2	794	664	29	9	7,447	10,009	31	14,039
Greece . . . . .	0	0	2	11	0	0	7	18	0	172
Italy . . . . .	0	0	90	55	0	0	600	392	0	800
Latvia . . . . .	0	0	0	0	0	0	0	4	0	4
Norway . . . . .	0	0	7	24	0	0	88	478	0	794
Netherlands . . . . .	7	24	527	646	22	137	4,952	5,512	262	9,112
Switzerland . . . . .	0	0	282	276	0	0	2,789	1,825	2	2,989
Yugoslavia . . . . .	9	2	0	0	18	13	2	33	13	57
Algeria . . . . .	—	—	—	—	66	498	1,257	1,777	620	2,520
Totals . . . . .	3,672	4,865	3,339	5,023	32,155	45,580	31,993	43,711	64,844	72,146

COUNTRIES	JANUARY				SIX MONTHS (August 1-January 31)				TWELVE MONTHS August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Oats. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . . .	0	4	0	15	15	49	9	150	73	218
Hungary . . . . .	13	0	0	0	35	2	0	2	7	2
Lithuania . . . . .	0	2	0	0	0	4	0	0	20	0
Poland . . . . .	26	2	0	0	51	18	0	0	62	0
Rumania . . . . .	0	0	0	0	617	212	0	0	293	0
Czechoslovakia . . .	154	66	0	0	2,202	300	0	53	884	57
Yugoslavia . . . . .	0	0	0	0	0	0	0	0	2	0
Canada . . . . .	121	403	42	0	2,485	2,145	320	536	4,628	655
United States . . . .	55	18	0	4	893	639	0	7	895	22
Argentina . . . . .	1,660	2,456	—	—	5,106	6,640	—	—	16,257	—
Chile . . . . .	...	...	...	...	101	106	0	0	223	0
Algeria . . . . .	...	...	...	...	90	84	26	276	273	384
Tunis . . . . .	4	4	0	0	84	126	0	0	212	0
Australia . . . . .	2	9	0	0	75	33	0	0	108	2
<i>Importing Countries:</i>										
Germany . . . . .	2	2	44	2	2	7	121	172	9	223
Austria . . . . .	0	0	64	126	0	0	498	736	0	1,462
Belgium . . . . .	0	0	77	64	4	2	258	520	37	1,504
Denmark . . . . .	9	9	13	33	55	44	51	284	66	500
Estonia . . . . .	0	0	0	0	0	0	0	7	0	7
Finland . . . . .	0	2	4	0	2	13	37	40	20	55
France . . . . .	0	0	37	112	2	4	829	655	7	3,214
Gr. Brit. and N. Irel.	2	9	276	265	11	37	2,793	4,030	203	8,494
Italy . . . . .	0	0	212	320	0	0	1,369	1,759	0	4,074
Latvia . . . . .	0	0	0	0	0	0	0	7	0	7
Norway . . . . .	0	0	0	7	0	0	11	130	2	273
Netherlands . . . . .	2	4	359	172	7	29	1,433	1,067	44	2,381
Sweden . . . . .	9	4	18	31	26	7	236	659	181	1,157
Switzerland . . . . .	0	0	359	298	0	0	2,293	2,346	2	5,033
<b>Totals . . . . .</b>	<b>2,059</b>	<b>2,994</b>	<b>1,505</b>	<b>1,449</b>	<b>11,863</b>	<b>10,501</b>	<b>10,484</b>	<b>13,436</b>	<b>24,508</b>	<b>29,724</b>
<b>Maize. — Thousand centals (1 cental = 100 lb.).</b>										
<b>THREE MONTHS (November 1-January 31)</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	143	419	0	0	1,250	710	0	0	2,890	0
Rumania . . . . .	1,836	3,133	0	0	13,790	11,162	0	0	34,421	2
Yugoslavia . . . . .	600	342	0	2	3,239	721	0	18	1,825	26
United States . . . .	66	68	7	24	1,684	355	37	84	3,084	220
Argentina . . . . .	7,388	10,968	—	—	25,538	49,895	—	—	175,473	—
Brazil . . . . .	...	...	—	—	0	0	—	—	2	—
Java and Madura . . .	...	...	—	—	57	123	—	—	2,467	—
Indo China . . . . .	340	370	—	—	1,627	1,228	—	—	3,459	—
Syria and Lebanon . .	...	...	—	—	4	4	13	4	7	37
Turkey . . . . .	18	31	0	0	29	37	0	0	373	0
Egypt . . . . .	...	...	...	...	9	0	0	4	15	46
Union of South Africa	...	...	...	...	1,087	1,241	0	0	4,991	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	930	1,129	0	0	2,756	3,210	0	17,007
Austria . . . . .	0	0	1,127	774	0	0	3,490	2,174	0	7,619
Belgium . . . . .	93	66	1,556	2,436	172	152	5,359	6,096	1,385	18,691
Denmark . . . . .	0	0	1,349	2,379	0	0	4,581	5,975	0	21,231
Spain . . . . .	0	0	115	395	0	0	547	1,025	0	6,931
Irish Free State . . .	0	0	410	1,360	0	0	1,263	3,300	0	13,658
Finland . . . . .	0	0	51	2	0	0	176	108	0	582
France . . . . .	0	2	2,294	2,273	0	4	5,505	6,537	26	25,869
Gr. Brit. and N. Irel.	121	229	4,684	6,715	379	739	15,146	22,075	3,208	64,058
Greece . . . . .	0	0	11	625	0	0	44	492	0	3,382
Hungary . . . . .	196	7	0	75	705	44	0	132	93	939
Italy . . . . .	0	0	229	1,221	0	0	522	3,069	7	15,737
Norway . . . . .	0	0	445	373	0	0	750	1,393	0	4,076
Netherlands . . . . .	15	22	3,968	5,421	31	40	11,841	13,089	223	36,919
Poland . . . . .	0	0	2	15	0	0	11	51	0	126
Portugal . . . . .	—	—	11	37	—	—	300	300	—	1,407
Sweden . . . . .	0	0	483	589	0	0	1,065	1,931	0	6,083
Switzerland . . . . .	0	0	90	298	0	0	395	1,168	2	3,717
Czechoslovakia . . .	0	0	90	873	0	0	306	4,109	0	9,958
Canada . . . . .	0	0	320	106	18	4	2,346	1,885	13	3,891
Japan . . . . .	—	—	0	170	—	—	2	538	—	1,695
Tunis . . . . .	0	0	0	40	0	0	0	168	0	324
<b>Totals . . . . .</b>	<b>10,816</b>	<b>15,657</b>	<b>17,172</b>	<b>27,132</b>	<b>49,619</b>	<b>66,459</b>	<b>56,459</b>	<b>78,935</b>	<b>233,964</b>	<b>264,231</b>

1) 2) See notes page 208.



COUNTRIES	JANUARY				TWELVE MONTHS (January 1-December 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932	1931	1932	1931	1931	1931
<b>Rice. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Spain . . . . .	7	55	0	0	871	833	0	0	—	—
Italy . . . . .	201	417	7	7	3,505	3,307	55	53	—	—
United States . . . . .	154	150	33	33	2,586	2,773	192	328	—	—
Brazil . . . . .	...	...	—	—	615	1,993	—	—	—	—
India . . . . .	1,592	3,843	71	55	48,001	48,442	683	589	—	—
Indo-China . . . . .	1,618	1,931	—	—	26,983	21,154	—	—	—	—
Siam . . . . .	3,264	2,524	—	—	34,106	25,029	—	—	—	—
Egypt . . . . .	...	...	...	...	571	644	710	747	—	—
<i>Importing Countries:</i>										
Germany . . . . .	46	84	604	419	1,047	1,373	8,481	8,962	—	—
Austria . . . . .	0	0	51	35	0	0	549	772	—	—
Belgium . . . . .	4	20	86	82	201	190	1,208	1,349	—	—
Denmark . . . . .	0	0	11	7	0	0	139	157	—	—
Estonia . . . . .	—	—	0	2	—	—	15	33	—	—
Irish Free State . . . . .	0	0	4	4	0	0	46	53	—	—
France . . . . .	84	62	573	443	864	937	8,327	6,777	—	—
Gr. Brit. and N. Irel. . . . .	11	20	55	117	163	271	2,747	2,687	—	—
Greece . . . . .	—	—	40	42	—	—	540	540	—	—
Hungary . . . . .	0	0	22	40	0	2	465	481	—	—
Latvia . . . . .	0	0	2	2	0	0	18	82	—	—
Lithuania . . . . .	0	0	0	0	0	0	20	22	—	—
Norway . . . . .	0	0	2	7	0	0	71	117	—	—
Netherlands . . . . .	101	112	201	53	1,863	2,480	2,784	4,963	—	—
Poland . . . . .	4	29	66	2	317	606	1,027	1,726	—	—
Portugal . . . . .	—	—	37	31	—	—	875	613	—	—
Sweden . . . . .	—	—	0	0	—	—	90	123	—	—
Switzerland . . . . .	0	0	35	60	0	0	432	454	—	—
Czechoslovakia . . . . .	0	0	24	99	0	0	1,096	1,127	—	—
Yugoslavia . . . . .	0	0	35	57	2	4	494	511	—	—
Canada . . . . .	0	0	31	40	9	0	593	710	—	—
Chile . . . . .	—	—	...	...	—	—	187	441	—	—
Ceylon . . . . .	0	0	842	1,010	4	9	10,386	10,196	—	—
Java and Madura . . . . .	...	...	...	...	73	231	3,303	6,327	—	—
Japan . . . . .	176	4	271	236	1,034	4,195	3,120	2,773	—	—
Syria and Lebanon . . . . .	...	...	...	...	0	0	392	322	—	—
Turkey . . . . .	0	0	2	4	0	0	93	183	—	—
Algeria . . . . .	...	...	...	...	9	2	198	179	—	—
Tunis . . . . .	0	0	2	4	0	0	40	31	—	—
Union of South Africa . . . . .	...	...	...	...	0	0	811	957	—	—
Australia . . . . .	2	13	11	4	86	161	49	29	—	—
New Zealand . . . . .	...	...	...	...	0	0	60	66	—	—
<b>Totals . . . . .</b>	<b>7,264</b>	<b>9,264</b>	<b>3,118</b>	<b>2,895</b>	<b>122,910</b>	<b>114,636</b>	<b>50,296</b>	<b>55,480</b>	—	—
<b>Linseed. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Estonia . . . . .	0	0	2	0	2	4	4	0	—	—
Lithuania . . . . .	7	29	0	—	170	247	0	0	—	—
Argentina . . . . .	4,303	4,195	—	—	44,403	41,661	—	—	—	—
India . . . . .	106	192	0	0	1,728	2,520	0	0	—	—
Tunis . . . . .	0	0	0	0	24	4	0	0	—	—
<i>Importing Countries:</i>										
Germany . . . . .	0	2	1,054	470	20	13	9,841	7,507	—	—
Belgium . . . . .	7	64	401	282	139	205	3,684	3,702	—	—
Denmark . . . . .	—	—	40	33	—	—	534	417	—	—
Spain . . . . .	—	—	0	13	—	—	531	465	—	—
Finland . . . . .	0	0	0	0	0	0	75	68	—	—
France . . . . .	0	0	351	258	7	18	5,187	5,814	—	—
Gr. Brit. and N. Irel. . . . .	2	0	247	368	4	4	8,294	7,599	—	—
Greece . . . . .	0	0	7	2	0	0	88	95	—	—
Hungary . . . . .	0	0	0	0	9	42	29	2	—	—
Italy . . . . .	0	0	132	95	0	0	1,512	1,351	—	—
Latvia . . . . .	18	11	4	2	53	106	75	90	—	—
Norway . . . . .	0	0	29	18	0	0	403	289	—	—
Netherlands . . . . .	2	46	807	1,016	77	49	9,912	9,253	—	—
Poland . . . . .	0	0	46	7	4	7	271	273	—	—
Sweden . . . . .	—	—	64	33	—	—	957	1,056	—	—
Czechoslovakia . . . . .	0	0	42	31	2	7	798	582	—	—
Yugoslavia . . . . .	0	0	7	0	0	0	115	126	—	—
Canada . . . . .	0	0	0	0	205	584	256	194	—	—
United States . . . . .	—	—	29	403	—	—	4,502	8,109	—	—
Japan . . . . .	—	—	33	33	—	—	148	185	—	—
Australia . . . . .	0	0	22	26	0	0	450	291	—	—
<b>Totals . . . . .</b>	<b>4,445</b>	<b>4,539</b>	<b>3,317</b>	<b>3,090</b>	<b>46,847</b>	<b>45,471</b>	<b>47,666</b>	<b>47,468</b>	—	—

COUNTRIES	JANUARY				TWELVE MONTHS (January 1-December 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932	1931	1932	1931	1931	1931
<b>Butter. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Austria . . . . .	324	101	2	2	1,565	2,862	802	1,565	—	—
Denmark . . . . .	24,145	29,108	51	163	347,886	378,429	922	1,596	—	—
Estonia . . . . .	778	1,135	0	0	27,626	31,844	0	0	—	—
Irish Free State . . . . .	507	212	0	203	36,932	42,307	2,632	3,325	—	—
Finland . . . . .	2,200	3,228	0	0	32,020	38,367	0	0	—	—
Hungary . . . . .	633	475	0	0	4,495	4,065	0	117	—	—
Latvia . . . . .	2,006	2,515	0	0	41,000	41,313	2	24	—	—
Lithuania . . . . .	564	474	0	0	21,883	19,191	0	0	—	—
Norway . . . . .	448	439	2	4	2,421	1,629	90	379	—	—
Netherlands . . . . .	4,200	2,337	33	2,760	44,926	72,660	9,323	8,887	—	—
Poland . . . . .	77	90	0	0	2,707	27,470	866	31	—	—
Sweden . . . . .	2,511	3,210	2	7	29,875	43,045	33	40	—	—
U. S. S. R. . . . .	—	—	—	—	68,198	68,024	—	—	—	—
Argentina . . . . .	5,851	7,443	—	—	55,973	51,167	—	—	—	—
India . . . . .	15	35	44	53	260	366	428	344	—	—
Syria and Lebanon . . . . .	—	—	—	—	315	1,817	1,867	344	—	—
Australia . . . . .	22,877	30,640	0	0	229,105	191,016	0	0	—	—
New Zealand . . . . .	30,523	14,436	—	—	244,588	222,718	—	—	—	—
<i>Importing Countries:</i>										
Germany . . . . .	0	4	7,233	18,951	478	269	153,264	220,950	—	—
Belgium . . . . .	13	68	3,799	5,393	1,841	2,756	46,778	41,562	—	—
Spain . . . . .	2	2	2	4	44	88	42	121	—	—
France . . . . .	459	822	6,186	99	7,921	11,045	26,140	40,836	—	—
Gr. Brit. and N. Irel. . . . .	860	8,521	83,472	79,653	35,693	40,228	946,298	903,967	—	—
Greece . . . . .	—	—	46	134	—	1,197	2,059	2,059	—	—
Italy . . . . .	29	31	262	902	827	1,283	3,818	6,188	—	—
Switzerland . . . . .	0	0	344	1,129	7	20	8,151	23,358	—	—
Czechoslovakia . . . . .	0	24	0	44	26	661	2,703	4,107	—	—
Canada . . . . .	40	112	86	18	3,505	10,681	238	2,822	—	—
United States . . . . .	95	141	101	123	1,607	2,008	1,014	1,881	—	—
Ceylon . . . . .	—	—	68	55	—	—	602	642	—	—
Java and Madura . . . . .	—	—	—	—	—	—	8,516	8,514	—	—
Japan . . . . .	—	—	9	20	—	—	163	231	—	—
Algeria . . . . .	—	—	—	—	35	73	3,955	4,389	—	—
Egypt . . . . .	—	—	—	—	364	44	765	1,918	—	—
Tunis . . . . .	2	0	146	93	4	9	1,305	930	—	—
<b>Totals . . . . .</b>	<b>99,159</b>	<b>105,553</b>	<b>101,888</b>	<b>109,810</b>	<b>1,244,127</b>	<b>1,307,455</b>	<b>1,221,914</b>	<b>1,281,127</b>	<b>—</b>	<b>—</b>
<b>Cheese. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	26 0	141	0	0	2,601	3,133	4	4	—	—
Denmark . . . . .	1,479	944	9	31	14,535	9,383	130	604	—	—
Finland . . . . .	622	589	0	0	7,225	5,776	26	33	—	—
Italy . . . . .	3,644	4,057	516	414	66,399	88,948	8,805	10,115	—	—
Lithuania . . . . .	115	214	0	0	1,768	2,546	7	11	—	—
Norway . . . . .	317	322	9	20	3,644	2,840	240	562	—	—
Netherlands . . . . .	10,825	12,970	60	82	170,061	190,460	1,076	1,345	—	—
Poland . . . . .	13	218	31	31	767	2,884	586	761	—	—
Switzerland . . . . .	3,393	3,089	234	591	43,700	54,307	4,751	8,470	—	—
Czechoslovakia . . . . .	373	1,171	152	218	6,124	10,981	3,071	3,779	—	—
Yugoslavia . . . . .	101	273	9	13	2,617	4,198	150	243	—	—
Canada . . . . .	364	752	73	71	86,940	84,790	1,166	1,446	—	—
Australia . . . . .	1,746	1,373	4	0	8,803	7,412	60	24	—	—
New Zealand . . . . .	25,349	23,303	0	0	163,980	183,271	2	4	—	—
<i>Importing Countries:</i>										
Germany . . . . .	494	247	6,296	7,639	4,237	7,359	108,688	120,404	—	—
Austria . . . . .	364	66	205	267	3,982	6,232	3,732	5,781	—	—
Belgium . . . . .	42	49	3,829	3,699	553	814	45,660	49,600	—	—
Spain . . . . .	7	7	141	132	238	236	2,480	3,867	—	—
Irish Free State . . . . .	0	20	106	172	37	194	2,019	2,687	—	—
France . . . . .	2,326	2,917	3,556	2,136	29,211	34,289	52,267	82,810	—	—
Gr. Brit. and N. Irel. . . . .	560	580	28,078	27,210	7,242	7,346	336,733	323,091	—	—
Greece . . . . .	49	0	101	324	620	190	1,753	3,960	—	—
Hungary . . . . .	4	4	7	7	33	110	11	203	—	—
Portugal . . . . .	—	—	15	13	—	—	608	842	—	—
Sweden . . . . .	—	—	84	64	—	—	1,045	1,691	—	—
United States . . . . .	108	179	3,069	3,728	1,534	1,863	55,632	61,992	—	—
India . . . . .	0	0	84	79	2	4	939	886	—	—
Java and Madura . . . . .	—	—	—	—	—	—	1,642	1,658	—	—
Syria and Lebanon . . . . .	—	—	—	—	68	86	1,195	708	—	—
Algeria . . . . .	—	—	—	—	159	172	11,100	11,182	—	—
Egypt . . . . .	—	—	—	—	231	57	4,769	4,614	—	—
Tunis . . . . .	0	0	176	183	13	24	2,191	2,033	—	—
<b>Totals . . . . .</b>	<b>52,555</b>	<b>53,487</b>	<b>46,844</b>	<b>47,124</b>	<b>627,324</b>	<b>709,905</b>	<b>652,538</b>	<b>705,410</b>	<b>—</b>	<b>—</b>

COUNTRIES	JANUARY				SIX MONTHS (August 1-January 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Cotton. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
United States . . . . .	4,264	4,938	106	64	27,207	26,557	295	194	46,787	620
Argentina . . . . .	2	2	—	—	284	254	—	—	584	—
Brazil . . . . .	—	—	—	—	2	174	—	—	183	—
India . . . . .	1,063	672	71	115	3,677	3,953	240	425	7,088	2,249
Egypt . . . . .	—	—	—	—	1,821	2,487	0	0	7,500	0
<i>Importing Countries:</i>										
Germany . . . . .	104	163	1,010	992	734	950	4,665	4,220	1,640	8,327
Austria . . . . .	0	0	37	55	0	0	207	300	0	553
Belgium . . . . .	22	26	198	141	132	190	981	825	348	1,349
Denmark . . . . .	—	—	20	9	—	—	68	62	—	134
Spain . . . . .	0	2	82	247	9	11	999	880	24	2,317
Estonia . . . . .	0	0	7	9	0	0	31	35	0	75
Finland . . . . .	0	0	20	7	0	0	99	79	0	159
France . . . . .	31	40	794	454	168	304	3,519	1,720	494	4,266
Gr. Brit. and N. Irel. . . . .	44	33	1,168	1,166	251	196	6,583	6,508	485	12,452
Greece . . . . .	0	0	15	18	0	0	77	110	0	192
Hungary . . . . .	0	0	26	26	0	0	192	163	0	333
Italy . . . . .	0	0	582	463	0	0	2,101	1,828	0	4,037
Latvia . . . . .	0	0	11	0	0	0	40	35	0	51
Norway . . . . .	0	0	4	7	0	0	31	24	0	44
Netherlands . . . . .	0	0	66	75	4	7	379	494	7	860
Poland . . . . .	2	2	99	84	11	13	635	569	22	1,074
Portugal . . . . .	—	—	22	33	—	—	218	190	—	434
Sweden . . . . .	0	0	49	40	—	—	291	302	—	564
Switzerland . . . . .	0	0	51	53	0	4	298	276	4	505
Czechoslovakia . . . . .	9	11	143	150	62	75	990	1,089	137	2,002
Yugoslavia . . . . .	0	0	20	22	0	0	93	108	0	201
Canada . . . . .	—	—	88	66	—	—	567	522	—	974
Japan . . . . .	64	53	1,850	1,601	254	392	6,468	5,851	1,041	16,484
Algeria . . . . .	—	—	—	—	0	0	2	2	4	7
<b>Totals</b>	<b>5,605</b>	<b>5,942</b>	<b>6,539</b>	<b>5,897</b>	<b>34,616</b>	<b>35,567</b>	<b>30,069</b>	<b>26,811</b>	<b>66,348</b>	<b>60,263</b>

**Wool. — (Thousand lb.).**

COUNTRIES	JANUARY				SIX MONTHS (August 1-January 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wool. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . . . . .	774	520	40	46	5,875	5,633	368	375	9,949	948
Hungary . . . . .	284	46	97	115	1,376	1,164	542	670	2,344	1,270
Argentina . . . . . (a)	38,206	28,052	—	—	126,652	90,745	—	—	249,304	—
Chile . . . . . (b)	1,468	783	—	—	6,241	3,785	—	—	8,098	—
India . . . . .	4,026	3,382	390	406	858	992	—	—	24,441	—
Syria and Lebanon . . . . .	—	—	—	—	19,575	18,836	2,756	1,744	35,402	5,020
Algeria . . . . .	—	—	—	—	1,466	1,854	875	366	3,935	985
Egypt . . . . .	—	—	—	—	2,538	2,392	672	459	6,856	1,252
Un. of S. Africa . . . . . (a)	—	—	—	—	4,089	549	4	0	1,413	4
Australia . . . . . (b)	67,709	58,923	205	589	99,828	82,480	223	545	298,044	0
New Zealand . . . . . (a)	38,361	35,098	0	0	1,656	1,479	—	—	2,596	1,261
(b)	3,479	3,979	0	0	471,941	434,654	403	661	762,756	2,008
(c)	—	—	—	—	30,210	26,914	4	7	38,535	15
(d)	—	—	—	—	63,363	48,270	0	2	177,836	2
(e)	—	—	—	—	21,334	15,014	9	13	43,314	13
<i>Importing Countries:</i>										
Germany . . . . . (a)	258	1,585	38,197	25,137	1,603	8,239	117,158	63,039	9,780	241,555
Austria . . . . . (b)	591	847	3,007	2,282	3,545	5,397	15,040	12,218	9,681	31,656
Belgium . . . . . (a)	2	11	1,149	2,659	31	49	7,059	5,844	82	14,006
Denmark . . . . . (b)	19,758	536	24,782	13,318	42,922	5,020	78,121	39,734	18,715	116,938
Spain . . . . .	1,709	1,587	245	256	8,239	9,866	1,702	1,444	22,465	3,036
Finland . . . . .	37	33	276	209	108	90	2,211	1,927	157	4,409
France . . . . .	234	243	190	311	1,177	1,265	1,436	1,246	2,566	10,483
Gr. Brit. and N. Irel. . . . .	3,563	3,318	83,668	47,060	15,408	23,455	215,384	124,131	45,631	393,116
Greece . . . . .	49,084	32,099	105,009	103,106	163,980	101,821	342,540	307,786	315,628	888,010
Italy . . . . . (a)	139	0	84	271	408	57	772	1,127	300	2,094
Norway . . . . . (b)	37	130	27,664	18,902	141	730	50,907	42,135	1,232	145,076
Netherlands . . . . . (a)	77	174	1,074	1,173	1,512	968	6,453	7,123	1,620	14,290
Poland . . . . . (b)	46	88	190	198	328	381	902	977	756	2,355
Sweden . . . . .	101	192	1,133	730	1,025	1,003	3,499	2,460	1,933	7,229
Switzerland . . . . . (a)	57	143	994	705	403	306	4,028	3,133	739	8,148
Yugoslavia . . . . . (b)	79	139	4,484	3,117	600	1,069	14,478	9,597	1,687	27,084
Canada . . . . .	—	—	1,598	2,423	—	—	6,967	7,540	—	17,745
Czechoslovakia . . . . .	—	15	1,493	2,147	130	298	8,889	7,238	397	20,150
Yugoslavia . . . . .	84	227	2,083	3,578	657	1,360	13,706	15,516	1,892	32,038
United States . . . . .	7	0	172	494	121	71	1,111	1,316	152	2,937
Japan . . . . .	181	386	646	633	2,033	3,684	3,351	2,194	5,159	6,277
Tunis . . . . .	584	172	5,135	12,555	915	540	21,592	55,208	3,893	82,777
(a)	0	0	26,797	22,769	24	33	84,854	64,232	77	192,901
(b)	26	0	9	11	53	42	267	223	172	465
<b>Totals</b>	<b>235,385</b>	<b>175,718</b>	<b>331,086</b>	<b>265,441</b>	<b>1,099,394</b>	<b>900,580</b>	<b>1,013,629</b>	<b>783,884</b>	<b>2,132,323</b>	<b>2,280,315</b>

a) = Wool, greasy; b) = Wool, scoured. — 1) 2) See notes page 208.

COUNTRIES	JANUARY		SEVEN MONTHS (July 1-Jan. 31)		TWELVE MONTHS (July 1-June 30)	COUNTRIES	JANUARY		SEVEN MONTHS (July 1-Jan. 31)		TWELVE MONTHS (July 1-June 30)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32
<b>Coffee. — (Thousand lb.).</b>						<b>Tea. — (Thousand lb.).</b>					
<b>EXPORTS.</b>						<b>EXPORTS.</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	1) 649,749	1,092,615	2,022,263	Ceylon . . . . .	15,979	19,227	131,180	127,053	245,982
India . . . . .	661	271	4,502	3,135	17,926	India . . . . .	28,274	29,785	306,228	288,800	342,946
Java and Madura .	...	...	1) 67,429	27,529	51,725	Java and Madura .	...	...	1) 76,551	1) 79,168	163,312
						Japan . . . . .	675	739	21,828	16,228	24,590
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	53	77	933	1,290	1,649	Belgium . . . . .	0	0	7	15	22
Belgium . . . . .	11	884	306	6,896	9,643	Irish Free State .	0	22	18	148	258
France . . . . .	2	4	57	11	15	France . . . . .	2	4	11	26	35
Netherlands . . . .	966	1,662	11,032	7,608	14,709	Gr. Brit. and N. Irel.	4,725	6,369	50,250	53,720	77,887
Portugal . . . . .	42	99	1,118	604	1,270	Netherlands . . . .	13	11	71	82	179
Switzerland . . . . .	18	84	218	417	613	United States . . .	29	95	168	309	474
Canada . . . . .	4	2	29	26	42	Syria and Lebanon .	...	...	1) 0	1) 0	20
United States . . . .	895	1,534	7,879	9,220	22,593	Algeria . . . . .	...	...	1) 20	1) 29	49
Ceylon . . . . .	0	0	2	9	11	Union of S. Africa .	...	...	2) 7	2) 20	121
Syria and Lebanon . .	...	...	1) 7	1) 4	46	Australia . . . . .	73	24	421	368	549
Australia . . . . .	11	2	29	33	55	New Zealand . . . .	...	...	2) 33	2) 31	148
<b>Totals . . . . .</b>	—	—	—	—	2,142,560	<b>Totals . . . . .</b>	49,770	56,276	586,793	566,021	856,532
<b>IMPORTS.</b>						<b>IMPORTS.</b>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	23,279	28,691	162,367	188,134	307,608	Germany . . . . .	922	1,105	6,272	6,374	10,494
Austria . . . . .	728	970	8,574	9,678	17,514	Austria . . . . .	55	104	593	728	1,135
Belgium . . . . .	3,545	15,408	66,403	79,629	114,762	Belgium . . . . .	93	49	381	342	661
Bulgaria . . . . .	90	168	408	802	1,658	Denmark . . . . .	152	150	747	783	1,380
Denmark . . . . .	3,889	6,464	23,958	38,327	66,439	Spain . . . . .	13	20	154	165	322
Spain . . . . .	2,732	3,680	24,668	27,335	53,903	Estonia . . . . .	4	33	44	101	172
Estonia . . . . .	0	33	236	159	298	Irish Free State . .	1,347	1,660	13,021	15,307	25,122
Irish Free State . . .	57	29	236	231	522	Finland . . . . .	49	13	123	174	249
Finland . . . . .	2,443	1,731	18,876	20,739	32,481	France . . . . .	236	322	1,735	1,953	3,419
France . . . . .	43,769	26,916	246,169	244,765	427,557	Gr. Britain and N.	52,457	56,619	395,799	383,028	550,364
Gr. Britain and N. . .						Ireland . . . . .	40	53	265	430	699
Ireland . . . . .	3,128	3,305	21,195	21,491	37,516	Greece . . . . .	108	35	456	432	562
Greece . . . . .	520	728	4,817	8,625	13,010	Hungary . . . . .	20	24	150	194	333
Hungary . . . . .	1,501	410	4,445	3,702	6,041	Italy . . . . .	13	18	75	97	128
Italy . . . . .	7,489	8,371	50,321	54,690	93,366	Latvia . . . . .	9	7	60	77	119
Latvia . . . . .	26	53	143	265	375	Lithuania . . . . .	37	37	231	240	386
Lithuania . . . . .	26	194	220	397	445	Netherlands . . . .	1,257	2,659	21,572	17,639	30,836
Norway . . . . .	2,394	2,332	19,026	22,642	38,189	Poland . . . . .	386	783	2,216	2,972	4,317
Netherlands . . . . .	8,186	9,675	62,369	64,646	103,379	Portugal . . . . .	11	31	227	366	648
Poland . . . . .	1,263	3,783	8,748	13,073	17,185	Sweden . . . . .	64	84	472	551	858
Portugal . . . . .	564	668	5,992	6,583	10,657	Switzerland . . . .	130	99	1,594	1,010	1,792
Sweden . . . . .	8,223	12,326	52,177	79,226	107,586	Czechoslovakia . . .	20	77	1,173	1,276	1,737
Switzerland . . . . .	2,218	2,668	28,380	18,958	34,286	Yugoslavia . . . . .	33	22	309	463	622
Czechoslovakia . . .	503	1,766	17,844	18,995	32,386	Canada . . . . .	3,148	3,303	18,775	17,544	39,031
Yugoslavia . . . . .	1,045	1,288	8,065	10,441	17,434	United States . . . .	9,039	10,029	62,263	58,983	90,460
Canada . . . . .	3,455	2,394	16,839	16,477	31,963	Chile . . . . .	...	...	1) 1,900	1) 2,826	5,172
United States . . . .	120,300	161,006	761,711	929,875	1,629,014	Syria and Lebanon .	...	...	1) 104	1) 337	586
Chile . . . . .	...	...	1) 3,349	1) 5,313	9,308	Turkey . . . . .	278	0	1,385	950	1,504
Ceylon . . . . .	456	66	1,817	2,709	3,572	Algeria . . . . .	...	...	1) 1,997	1) 1,349	10,421
Japan . . . . .	254	410	1,107	1,246	6,724	Egypt . . . . .	...	...	2) 8,796	2) 6,587	13,999
Syria and Lebanon . .	...	...	1) 1,093	1,246	2,324	Tunis . . . . .	179	260	1,523	5,540	6,669
Turkey . . . . .	884	260	14,950	14,511	15,862	Union of S. Africa .	...	...	2) 4,619	2) 6,444	12,683
Algeria . . . . .	...	...	2) 6,559	2) 6,204	13,809	Australia . . . . .	3,285	2,754	30,448	25,909	44,899
Egypt . . . . .	...	...	2) 2,057	1,903	26,026	New Zealand . . . .	...	...	2) 4,676	2) 4,835	2,522
Un. of S. Africa . . .	443	196	12,154	13,794	3,510	<i>Exporting Countries:</i>					
Australia . . . . .	282	201	1,468	1,792	452	India . . . . .	520	348	4,376	5,024	6,486
New Zealand . . . . .	...	...	2) 139	209	106	Java and Madura . .	...	...	1) 3,554	1) 6,552	9,771
<b>Exporting Countries:</b>						<b>Totals . . . . .</b>	73,905	80,698	592,085	577,582	880,558
India . . . . .	0	0	110	60	106						
Java and Madura . . .	...	...	...	...	...						
<b>Totals . . . . .</b>	243,692	296,390	1,666,799	1,936,091	3,306,021						

1) 2) See notes page 208.

COUNTRIES	JANUARY		FOUR MONTHS (Oct. 1-Jan. 31)		TWELVE MONTHS (Oct. 1- Sept. 30)	COUNTRIES	JANUARY		SIX MONTHS (August 1-Jan. 31)		TWELVE MONTHS (August 1- July 31)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32
<b>Cacao. — (Thousand lb.).</b>						<b>Total Wheat and Flour *)</b>					
<b>EXPORTS.</b>						<b>(Thousand cents).</b>					
<i>Exporting Countries:</i>						<i>a) NET EXPORTS.</i>					
Grenada . . . . .	...	...	2) 642	2) 562	9,658	Germany . . . . .	836	3) 1,909	3) 1,909	3) 3,843	6,691
Dominican Republ. . . . .	3,051	3,159	8,819	6,621	35,975	Bulgaria . . . . .	37	474	1,232	3,843	6,691
Brazil . . . . .	...	...	1) 84,863	1) 67,883	197,978	Spain . . . . .	0	0	2	3) 3)	3)
Ecuador . . . . .	...	...	2) 2,646	2) 3,527	37,765	Hungary . . . . .	192	403	2,412	8,453	10,752
Trinidad . . . . .	...	...	2) 2,908	2) 3,986	39,617	Lithuania . . . . .	2	2	15	22	55
Venezuela . . . . .	...	...	...	...	36,019	Poland . . . . .	3) 31	3) 31	20,261	421	1,929
Ceylon . . . . .	1,389	1,314	4,233	4,165	9,266	Rumania . . . . .	5) 699	5) 1,332	5) 9,178	5) 38,757	5) 37,909
Java and Madura . . . . .	...	...	1) 875	1) 853	3,366	U. S. S. R. . . . .	77	373	553	6,733	8,935
Cameroon . . . . .	...	...	1) 12,207	1) 9,123	27,315	Yugoslavia . . . . .	9,852	6,543	100,099	70,162	123,625
Ivory Coast . . . . .	...	...	...	...	54,578	Canada . . . . .	1,442	3,942	13,971	38,358	65,566
Gold Coast . . . . .	81,831	94,883	265,149	230,055	462,878	United States . . . . .	9,612	8,790	22,670	28,640	83,525
Nigeria . . . . .	...	...	1) 58,575	1) 30,164	123,929	Argentina . . . . .	...	...	3) 1)	11	46
St. Thomas and Prince Is. . . . .	...	...	1) 7,240	1) 10,000	25,867	Chile . . . . .	33	90	317	595	1,118
Togoland . . . . .	...	...	1) 3,527	1) 5,681	13,916	Syria and Lebanon . . . . .	...	...	3) 1)	306	3)
<i>Importing Countries:</i>						Turkey . . . . .	9	95	57	355	922
Germany . . . . .	0	121	20	359	496	Algeria . . . . .	...	...	1) 3,212	1) 688	3,508
Belgium . . . . .	46	104	428	333	1,508	Tunis . . . . .	82	3)	2,136	1,382	5,104
France . . . . .	0	0	60	2	4	Australia . . . . .	12,913	11,726	35,980	36,628	92,453
Netherlands . . . . .	362	143	1,268	3,565	6,740	Totals . . . . .	35,786	34,154	193,774	255,615	464,473
United States . . . . .	633	935	3,796	2,903	7,011						
Australia . . . . .	0	11	2	119	143						
Totals . . . . .	—	—	—	—	1,094,029						
<b>IMPORTS.</b>						<i>b) NET IMPORTS</i>					
<i>Importing Countries.</i>						<i>Importing Countries.</i>					
Germany . . . . .	12,780	20,078	58,802	69,836	175,744	Germany . . . . .	4) 968	4) 1,975	13,913		
Austria . . . . .	556	613	2,381	4,639	13,651	Austria . . . . .	661	820	3,382	4,522	8,113
Belgium . . . . .	915	3,025	5,536	7,546	21,588	Belgium . . . . .	1,856	1,526	11,969	13,986	27,862
Bulgaria . . . . .	93	181	183	359	1,323	Denmark . . . . .	461	573	4,059	6,850	10,412
Denmark . . . . .	796	1,351	2,033	2,321	7,756	Spain . . . . .	0	0	4) 18	6,457	
Spain . . . . .	1,960	2,191	6,528	6,338	21,892	Estonia . . . . .	0	13	0	159	262
Estonia . . . . .	11	176	77	302	452	Irish Free State . . . . .	531	608	5,095	5,871	11,715
Irish Free State . . . . .	591	128	1,034	441	1,149	Finland . . . . .	112	90	1,354	1,574	2,555
Finland . . . . .	35	7	75	86	181	France . . . . .	763	1,462	12,652	17,926	47,137
France . . . . .	6,718	9,354	34,494	31,623	91,192	Gr. Brit. and N. Irel. . . . .	9,586	6,144	60,896	78,782	143,918
Gr. Brit. and N. Irel. . . . .	13,678	17,456	53,952	46,224	138,407	Greece . . . . .	928	985	5,983	6,942	14,204
Greece . . . . .	101	256	933	1,120	2,844	Italy . . . . .	1,032	882	2,709	2,972	19,930
Hungary . . . . .	681	324	1,698	2,626	5,573	Latvia . . . . .	0	20	13	267	575
Italy . . . . .	1,534	1,237	5,765	5,527	15,053	Norway . . . . .	346	357	2,392	2,864	5,090
Latvia . . . . .	40	216	317	622	1,607	Netherlands . . . . .	1,645	1,618	8,468	10,002	18,680
Lithuania . . . . .	84	128	229	238	615	Poland . . . . .	79	4)	121	4)	4)
Norway . . . . .	377	853	1,272	2,379	5,033	Portugal . . . . .	42	4	456	586	1,660
Netherlands . . . . .	15,607	15,585	36,806	35,841	92,202	Sweden . . . . .	126	381	1,415	1,984	4,096
Poland . . . . .	1,049	1,140	4,621	4,155	11,444	Switzerland . . . . .	5) 851	5) 981	5) 6,182	5) 7,509	5) 12,666
Portugal . . . . .	53	22	346	346	855	Czechoslovakia . . . . .	549	873	1,254	8,157	14,758
Sweden . . . . .	988	1,539	2,923	4,716	10,481	Chile . . . . .	...	...	1) 366	4)	4)
Switzerland . . . . .	2,015	913	4,359	2,502	11,197	Ceylon . . . . .	55	71	328	328	542
Czechoslovakia . . . . .	1,257	1,484	6,627	5,119	21,526	Indo-China . . . . .	29	37	227	271	518
Yugoslavia . . . . .	64	86	328	443	1,501	Japan . . . . .	9	1,038	677	4,273	12,584
Canada . . . . .	1,545	1,504	6,294	4,731	16,444	Java and Madura . . . . .	...	...	1) 556	1) 721	1,517
United States . . . . .	56,408	37,276	189,118	110,712	420,143	Syria and Lebanon . . . . .	...	...	1) 13	4)	223
Australia . . . . .	2,385	2,619	2,822	5,027	11,252	Egypt . . . . .	...	...	2) 154	2) 1,676	4,231
New Zealand . . . . .	...	...	2) 227	2) 335	1,554	Tunis . . . . .	4)	18	4)	4)	4)
Totals . . . . .	122,321	119,742	429,780	356,155	1,102,661	Union of S. Africa . . . . .	...	...	2) 130	2) 507	1,049
						New Zealand . . . . .	...	...	2) 527	2) 110	569
						Totals . . . . .	19,661	19,469	131,378	180,832	385,236

\*) Flour reduced to 4 sin on the basis of the coefficient: 1,000 cents of flour = 1,333.33 cents of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 31 December. — 2) Data up to 30 November. — 3) See Net Imports. — 4) See Net Exports. — 5) Wheat only.

## STOCKS

STOCKS (TOTAL AND QUANTITIES FOR SALE) IN FARMERS' HANDS IN GERMANY.

PRODUCTS	% Total stocks: total production				% Quantities intended for sale : total production				% Stocks in elevators: total production 1)	
	15 Feb. 1933	15 Jan. 1933	15 Feb. 1932	15 Feb. 1931	15 Feb. 1933	15 Jan. 1933	15 Feb. 1932	15 Feb. 1931	15 Feb. 1933	15 Jan. 1933
Winter wheat . . .	35.8	43.7	22.6	23.4	29.9	37.3	16.9	16.8	7.8	7.4
Spring wheat . . .	57.5	66.0	48.5	50.5	47.1	54.7	38.6	37.3	5.5	5.6
Winter rye . . .	35.2	43.5	25.1	35.2	18.6	23.8	9.9	17.0	3.3	3.9
Winter barley . . .	16.5	21.0	15.3	16.7	2.7	3.2	2.2	2.0	0.2	0.1
Spring barley . . .	32.4	41.9	31.6	26.3	15.1	21.4	15.3	10.5	0.7	0.5
Oats . . .	54.3	62.2	50.9	54.1	12.9	14.3	11.9	13.3	0.5	0.5
Potatoes . . .	42.4	49.9	40.8	40.9	13.4	15.7	12.5	11.9	—	—

1) These stocks are the property of farmers but are not on the farms; as they are partly in commercial elevators certain quantities are reckoned twice, the report on stocks in elevators not making any distinction of ownership.

Authority: Preisberichtstelle beim Deutschen Landwirtschaftsrat.

STOCKS OF CEREALS IN COMMERCIAL ELEVATORS AND MILLS IN GERMANY 1).

PRODUCTS	Last day of month				Last day of month			
	February 1933	January 1933	December 1932	February 1932	February 1933	January 1933	December 1932	February 1932
	1,000 centals				1,000 bushels or barrels			
WHEAT.								
Grain . . . . .	14,855	15,170	15,527	11,993	24,758	25,283	25,878	19,988
Flour for bread . . . . .	2,987	3,095	3,078	3,267	1,524	1,579	1,570	1,667
TOTAL 2) . . . . .	18,839	19,297	19,630	16,349	31,397	32,160	32,716	27,249
RYE:								
Grain . . . . .	13,067	13,285	12,921	8,047	23,334	23,723	23,074	14,370
Flour for bread . . . . .	1,537	1,579	1,795	1,347	788	805	916	687
TOTAL 2) . . . . .	15,115	15,390	15,313	9,843	26,993	27,480	27,349	17,576
BARLEY . . . . .	2,998	3,629	4,237	3,968	6,247	7,560	8,828	8,268
OATS . . . . .	2,229	2,209	2,253	2,910	6,965	6,903	7,041	9,094

1) See note under the corresponding table in the Bulletin for March, 1932 on page 218. — 2) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain (1,000 barrels of flour = 4,355.55 bushels of wheat or 4,584.80 bushels of rye).

QUANTITIES OF CEREALS ON OCEAN PASSAGE WITH FIRST DESTINATION FOR EUROPE.

PRODUCTS	Saturday nearest to 1st of month					Saturday nearest to 1st of month				
	March 1933	Feb. 1933	Jan. 1933	March 1932	March 1931	March 1933	Feb. 1933	Jan. 1933	March 1932	March 1931
	1,000 centals					1,000 bushels				
Wheat (and flour in terms of wheat) . . . . .	36,230	29,347	21,850	34,790	34,728	60,384	48,912	36,416	57,984	57,880
Rye . . . . .	576	115	19	1,253	542	1,029	206	34	2,237	969
Barley . . . . .	2,828	2,012	1,224	2,756	4,292	5,892	4,192	2,550	5,742	8,942
Oats . . . . .	1,354	1,632	710	2,995	2,330	4,230	5,100	2,220	9,360	7,280
Malt . . . . .	9,615	11,150	12,662	12,134	14,717	17,169	19,911	22,611	21,669	26,280

Authority: Broomhall's Corn Trade News.

COMMERCIAL CEREALS IN STORE IN CANADA AND THE UNITED STATES.

SPECIFICATION	Friday or Saturday nearest to 1st of month					Friday or Saturday nearest to 1st of month				
	March 1933	Feb. 1933	Jan. 1933	March 1932	March 1931	March 1933	Feb. 1933	Jan. 1933	March 1932	March 1931
	1,000 centals					1,000 bushels				
<b>WHEAT:</b>										
Canadian in Canada . . . .	134,121	137,512	141,910	103,195	103,619	223,535	229,187	236,516	171,991	172,699
U. S. in Canada . . . . .	3,932	4,076	4,163	16,609	2,791	6,554	6,793	6,938	27,682	4,951
U. S. in the United States . .	88,279	94,819	101,182	129,769	125,214	147,132	158,031	168,636	216,282	208,690
Canad. in the United States .	4,675	6,685	8,144	8,753	10,851	7,792	11,142	13,574	14,589	18,085
Total . . . . .	231,007	243,092	255,399	258,326	242,655	385,013	405,153	425,664	430,544	404,425
<b>RYE:</b>										
Canadian in Canada . . . .	2,860	2,811	2,792	6,145	7,313	5,108	5,020	4,985	10,973	13,059
U. S. in Canada . . . . .	55	55	55	378	1,191	99	99	99	675	2,126
U. S. in the United States . .	4,353	4,443	4,476	5,603	7,991	7,774	7,934	7,992	10,006	14,270
Canad. in the United States .	305	305	307	778	295	545	545	548	1,389	528
Total . . . . .	7,573	7,614	7,630	12,904	16,790	13,526	13,598	13,624	23,043	29,983
<b>BARLEY:</b>										
Canadian in Canada . . . .	3,206	3,267	3,190	4,741	13,565	6,679	6,806	6,645	9,878	28,259
U. S. in Canada . . . . .	10	10	10	12	139	21	21	21	25	291
U. S. in the United States . .	4,858	5,048	4,918	2,488	5,894	10,121	10,516	10,245	5,184	12,279
Canad. in the United States .	0	0	0	745	608	0	0	0	1,552	1,267
Total . . . . .	8,074	8,325	8,118	7,986	20,206	16,821	17,343	16,911	16,639	42,096
<b>OATS: (1)</b>										
Canadian in Canada . . . .	3,321	3,177	3,172	4,966	4,692	10,377	9,929	9,911	15,519	14,661
U. S. in Canada . . . . .	133	253	372	1	284	416	790	1,162	2	887
U. S. in the United States . .	8,266	8,357	8,470	5,740	7,369	25,831	26,116	26,468	17,938	23,029
Canad. in the United States .	0	0	0	1	1	0	0	0	2	3
Total . . . . .	11,720	11,787	12,014	10,708	12,346	36,624	36,835	37,541	33,461	38,580
<b>MAIZE:</b>										
U. S. in Canada . . . . .	1,244	1,743	2,129	488	236	2,221	3,113	3,801	871	423
Of other origin in Canada . .	997	1,048	998	1,000	402	1,780	1,872	1,782	1,786	717
U. S. in the United States . .	20,646	18,843	17,172	10,376	11,260	36,868	33,648	30,665	18,528	20,107
Total . . . . .	22,887	21,634	20,299	11,864	11,898	40,869	38,633	36,248	21,185	21,247

1) For oats the bushel is of 32 lbs.

GRAIN AND FLOUR STOCKS AT THE PORTS OF GREAT BRITAIN AND IRELAND 1).

PRODUCTS	First of the month					First of the month				
	March 1933	Feb. 1933	Jan. 1933	March 1932	March 1931	March 1933	Feb. 1933	Jan. 1933	March 1932	March 1931
	1,000 centals					1,000 bushels				
<b>WHEAT:</b>										
Grain . . . . .	3,384	3,576	3,840	9,336	6,912	5,640	5,960	6,400	15,560	11,520
Flour as grain . . . . .	456	600	672	960	864	760	1,000	1,120	1,600	1,440
TOTAL . . . . .	3,840	4,176	4,512	10,296	7,776	6,400	6,960	7,520	17,160	12,960
<b>Barley . . . . .</b>	720	540	660	880	1,360	1,500	1,125	1,375	1,833	2,833
<b>Oats . . . . .</b>	288	320	432	320	1,104	900	1,000	1,350	1,000	3,450
<b>Maize . . . . .</b>	2,496	2,832	2,976	5,904	2,448	4,437	5,057	5,314	10,543	4,371

1) Imported cereals.  
Authority: Broomhall's Corn Trade News.

## STOCKS OF COTTON ON HAND IN THE UNITED-STATES.

LOCATION	Last day of the month					Last day of the month				
	Feb. 1933	Jan. 1933	Dec. 1932	Feb. 1932	Feb. 1931	Feb. 1933	Jan. 1933	Dec. 1932	Feb. 1932	Feb. 1931
	1,000 centals					1,000 bales (counting round as half bales)				
In consuming establishments . . . .	7,088	7,349	7,522	8,028	7,054	1,442	1,495	1,530	1,633	1,550
In public storage and at compresses . . . .	46,144	49,298	50,917	49,004	35,426	9,380	10,021	10,350	9,961	7,314
TOTAL . . . .	53,232	56,647	58,439	57,032	42,930	10,822	11,516	11,880	11,594	8,864

## STOCKS OF COTTON AT BOMBAY AND AT ALEXANDRIA.

PORTS	Thursday nearest to 1st of month					Thursday nearest to 1st of month				
	March 1933	Feb. 1933	Jan. 1933	March 1932	March 1931	March 1933	Feb. 1933	Jan. 1933	March 1932	March 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs.)				
Bombay 1) . . . .	2,596	2,524	2,091	2,180	3,815	543	528	437	456	798
Alexandria . . . .	3,961	4,119	4,214	5,065	5,153	829	862	882	1,060	1,078

1) Stocks held by exporters, dealers and mills.

Authorities: *East Indian Cotton Ass.* and *Commission de la Bourse de Minet-el-Bassal.*

## STOCKS OF COTTON IN EUROPE.

COUNTRIES, PORTS, DESCRIPTIONS	Thursday or Friday nearest to 1st of month					Thursday or Friday nearest to 1st of month				
	March 1933	Feb. 1933	Jan. 1933	March 1932	March 1931	March 1933	Feb. 1933	Jan. 1933	March 1932	March 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs.)				
<i>Great Britain:</i>										
American . . . .	2,436	2,423	2,361	1,989	2,780	510	507	494	416	581
Argentine, Brazilian, etc. . . . .	122	138	162	83	204	26	29	34	17	43
Peruvian, etc. . . .	241	267	294	194	344	50	56	61	41	72
East Indian, etc. . .	300	292	334	552	488	63	61	70	115	102
Egyptian, Sudan- ese . . . . .	1,296	1,298	1,281	1,470	1,486	271	272	268	308	311
Other 1) . . . . .	83	93	77	126	234	17	19	16	26	49
TOTAL . . . . .	4,478	4,511	4,509	4,414	5,536	937	944	943	923	1,158
<i>Bremen:</i>										
American . . . .	2,544	2,252	2,388	1,486	2,458	532	471	500	311	514
Other . . . . .	97	122	54	22	58	21	25	11	5	12
TOTAL . . . . .	2,641	2,373	2,442	1,508	2,516	553	496	511	316	526
<i>Le Havre:</i>										
American . . . .	1,307	1,382	1,214	805	1,591	273	289	254	168	333
Other . . . . .	37	43	40	55	164	8	9	8	12	34
TOTAL . . . . .	1,344	1,425	1,254	860	1,755	281	298	262	180	367
<i>Total Continent 2):</i>										
American . . . .	4,740	4,417	4,386	3,141	4,665	992	924	918	657	976
Argentine, Brazilian, etc. . . . .	16	20	18	32	121	3	4	4	7	25
E. Indian, Australian, etc. . . . .	144	176	88	90	195	30	37	18	19	41
Egyptian . . . .	139	125	121	124	104	29	26	25	26	22
W. Indian, W. African, E. African, etc. . . . .	42	33	28	28	76	9	7	6	6	15
TOTAL . . . . .	5,081	4,771	4,641	3,415	5,161	1,163	998	971	715	1,080

1) Includes: W. Indian, etc., E. African, etc.; W. African, and Australian. — 2) Includes Bremen, Le Havre, and other Continental ports  
Authority: *Liverpool Cotton Ass.*



## MONTHLY REVIEW OF PRICES

(All quotations are, unless otherwise, for spots)

PRODUCTS, MARKETS AND DESCRIPTION	17	10	3	24	AVERAGE 1)				
	March	March	March	Feb.	Feb.	March	March	Commercial Season	
	1933	1933	1933	1933	1933	1932	1931	1931-32	1930-31
<b>WHEAT.</b>									
Budapest (a): Tisza region (78 kg. p. hl; pengo p. quintal) . . . . .	15.32	15.45	...	...	...	13.92	15.82	12.28	15.34
Braila: Good quality (lei p. quintal) 2) . . . . .	650	n. q.	580	n. q.	n. q.	324	316	305	351
Winnipeg: No. 1 Manitoba (cents p. 60 lbs) . . . . .	50 1/2	50 1/2	46 1/2	46 1/2	45 1/2	63 1/2	56 1/2	59 1/2	64 1/2
Chicago: No. 2 Hard Winter (cents p. 60 lbs) . . . . .	55	n. q.	49 1/2	48	47 1/2	55 1/2	79 1/2	54 1/2	78
Minneapolis: No. 1 Northern (cents p. 60 lbs) . . . . .	52 1/2	n. q.	48 1/2	48 1/2	47 1/2	68 1/2	76 1/2	66 1/2	77 1/2
New-York: No. 2 Hard Winter (cents p. 60 lbs) . . . . .	62 1/2	n. q.	58 1/2	57	56 1/2	67 1/2	n. q.	66 1/2	n. 91 1/2
Buenos Aires (b): Barletta (80 kg. p. hectol; pesos paper p. quintal) . . . . .	5.50	5.40	5.00	5.30	5.39	6.96	5.61	6.68	6.83
Karachi: Karachi white, 2 % barley, 1 1/2 % diri (rupees p. 646 lbs.) . . . . .	28-14-0	30-10-0	30-6-0	30-6-0	30-14-9	22-10-0	19-7-6	21-15-9	19-15-2
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	20.00	19.90	19.90	19.90	19.30	24.77	28.66	23.63	26.00
Hamburg, c. i. f. (Reichsmarks p. quintal):									
No. 2 Manitoba . . . . .	9.25	9.10	8.35	8.09	8.14	11.21	12.03	10.38	12.65
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 9.32	n. 13.00
Burusso 3) . . . . .	7.00	7.50	6.65	6.77	6.95	9.22	9.71	8.78	11.10
Antwerp (francs p. quintal):									
Home grown . . . . .	78.00	79.00	79.00	78.00	78.25	n. q.	89.00	83.10	95.50
No. 2 Hard Winter, Gulf 4) . . . . .	69.00	69.50	69.00	69.00	68.25	92.25	124.50	81.75	112.50
Paris: Home-grown, 75-77 kg. (francs p. quintal). . . . .	102.60	103.50	102.50	104.85	107.35	173.20	181.25	167.10	175.00
London: Home grown (shillings p. 504 lbs.) . . . . .	22/9	22/9	22/9	22/9	22/9	26/-	22/6	26/5	27/1
London and Liverpool, c. i. f., parcels, shipping current month (shillings p. 480 lbs.) . . . . .									
South Russian (on sample) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	20.4	22/3	23/7
No. 3 Manitoba . . . . .	24/6	23/10 1/2	22/6	22/7 1/2	22/10 1/2	29/5	23/3	25/9	25/4
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	28/3	24.08	25/3	26/4
White Pacific . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	30/-	n. q.	26/5	26/7
Rosafé (float) 5) . . . . .	20/6	20/3	19/6	19/9	20/6 1/2	25/4	20/1	23/8	23/5
Choice White Karachi . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	27/-
Australian . . . . .	23/3	23/-	22/6	23/-	23/6	27/11	21/4	25/9	25/7
Milan (a): Home-grown, soft, "Buono mercantile" (76 kg. p. hl; lire p. quintal) . . . . .	105.00	106.00	106.00	106.50	107.85	118.65	104.25	106.20	109.10
Genoa c. i. f. Plate (shillings p. metric ton) 6) . . . . .	n. q.	n. 42.00	n. 1.57	n. 1.57	n. 1.61	n. q.	n. 94/10	n. 2.21	110/-
<b>RYE.</b>									
Budapest (a): Home-grown (pengo p. quintal) . . . . .	7.80	7.85	...	...	...	15.24	11.25	12.24	10.79
Berlin: Home-grown (Reichsmarks p. quintal) . . . . .	15.60	15.60	15.50	15.50	15.47	19.45	17.92	19.00	17.18
Hamburg, c. i. f. (Reichsmarks p. quintal):									
Russian (72-73 kg. p. hl) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	9.81	n. q.	n. 9.50	n. q.
La Plata (74-75 kg. p. hl) . . . . .	n. 5.68	n. 5.87	n. 5.65	n. 5.75	5.64	9.44	n. q.	8.36	n. 7.65
Minneapolis: No. 2 (cents p. 56 lbs.) . . . . .	36 1/2	35	33	32	31 1/2	47 1/2	36 1/2	42 1/2	42 1/2
Groningen (c): Home-grown (florins p. quintal) . . . . .	3.97	3.88	3.70	3.70	3.72	5.10	3.91	5.13	4.45
<b>BARLEY.</b>									
Braila: Average quality (lei p. quintal, 2) . . . . .	195	207	190	205	n. 205	314	236	263	232
Winnipeg: No. 4 Western (cents p. 48 lbs.) . . . . .	28 1/2	26 1/2	55 1/2	25 1/2	25 1/2	37 1/2	22 1/2	34 1/2	26 1/2
Chicago: Feeding (cents p. 48 lbs.) . . . . .	37	n. q.	25	25	26	49 1/2	44	43 1/2	43 1/2
Minneapolis: Feeding, "lower grades" (cents per 48 lbs.) . . . . .	24	21	20	20	21 1/2	46 1/2	35 1/2	38 1/2	37 1/2
Berlin: Home-grown fodder (Reichsmarks per quintal) . . . . .	16.70	16.70	16.70	16.70	16.25	17.57	21.21	16.41	19.52
Antwerp: Danubian (francs p. quintal) . . . . .	53.00	53.50	54.00	53.00	53.25	83.00	72.00	77.25	73.25
London: English malting (shillings p. 448 lbs.) . . . . .	35/6	35/6	35/6	35/6	35/6	37/6	40/-	39/4	35/8
London and Liverpool, c. i. f., parcels (shillings per 400 lbs.):									
Danubian 3 % . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	15/4	n. q.	15/2
Russian (Azoff-Black sea) . . . . .	n. q.	n. q.	15/-	15/-	15/5	n. q.	n. q.	18/11	14/3
Canadian Western, N. 3. . . . .	17/-	16/6	16/-	16/9	17/2 1/2	23/6	15/4	20/11	15/11
Californian malting (shillings p. 448 lbs.) . . . . .	20/-	20/-	20/-	20/-	20/9	37/6	23/7	33/4	27/8
Groningen (c): Home grown winter (fl. p. quintal) . . . . .	4.15	4.42	4.42	4.55	4.54	5.90	4.70	5.87	4.97

n. c. = not quoted. — n. = nominal. — a) Saturday prices. — b) Thursday prices. — c) Prices of preceding Tuesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) Owing to the freezing of the Danube the Braila exchange was closed from 20 January. For this reason quotations for Costanza are given. — 3) August-Dec. 1930: 78 kg. p. hl: Jan. 1931 - Jan. 1932: 79 kg.; Feb-Dec. 1932: 80 kg.; afterwards: 79 kg. — 4) From July 1931: No. 1 Hard Winter, Gulf. — 5) August-Nov. 1930: 62 1/2 lbs. per bushel; Dec. 1930 - Feb. 1931: 63 1/2 lbs.; March - Nov. 1931: 63 lbs.; Dec. 1931: 63 1/2 lbs.; Jan.-Dec. 1932: 64 lbs. afterwards 63 1/2 lbs. — 6) From April, 1932. dollars p. quintal. — 7) No. 1 Hard Winter. — 8) French francs p. quintal — 9) 71-77 kg. p. hl.

PRODUCTS, MARKETS AND DESCRIPTION	17 March 1933	10 March 1933	3 March 1933	24 Feb. 1933	AVERAGE 1)				Commercial Season	
					Feb. 1933	March 1932	March 1931			
								1931-32	1930-31	
OATS.										
Braila: Good quality (1st p. quintal) 2) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	310	251	285	247	
Winnipeg: No. 2 White (cents per 34 lbs.) . . . . .	25	25 1/2	24 1/4	24 1/4	23 3/4	30 1/4	27 1/4	31 1/4	30	
Chicago: No. 2 White (cents per 32 lbs.) . . . . .	18 1/2	n. q.	16 1/4	16 1/4	16 1/4	24 1/4	32	24 1/4	32 1/2	
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	4.10	4.15	4.07 1/2	4.05	4.00	5.45	3.14	5.33	3.58	
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	12.65	12.75	12.65	12.65	11.92	15.65	15.77	15.10	16.17	
Paris: Home grown, black and other (francs p. quintal) . . . . .	71.75	73.65	73.75	76.50	78.60	110.95	79.85	101.75	81.00	
London: Home grown white (shillings p. 336 lbs.) . . . . .	18/-	18/-	18/-	18/-	18/-	21/3	17/6	21/3	18/4	
London and Liverpool c. i. f., parcels (shillings p. 320 lbs.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 12/1	
Danubian (39-40 lbs.) . . . . .	12/-	11/9	11/6	11 1/4	11 1/4	15/2	9/9	14/5	10/9	
Plate (l. a. q.) . . . . .	n. q.	n. q.	n. q.	n. q.	12/10	n. q.	10/10	16/-	12/-	
Chilian Tawny . . . . .										
Milan (b): spot (lire p. quintal):										
Home grown . . . . .	65.50	65.50	65.50	65.50	66.15	n. 76.50	73.50	73.60	73.95	
Foreign imported . . . . .	53.50	53.50	53.50	55.00	56.00	63.65	55.00	65.20	60.40	
MAIZE.										
Braila: Danubian (1st p. quintal) 2) . . . . .	167	173	173	175	182	215	230	187	210	
Chicago: No. 2 Mixed American (cents p. 56 lbs.) . . . . .	26 1/2	n. q.	23 1/4	24	24 1/4	34 1/4	61 1/4	34	58 1/4	
Buenos Aires (a): Yellow Plate (pesos paper p. quintal) . . . . .	4.15	4.25	4.35	4.22 1/2	4.30	4.96	4.04	4.63	3.82	
Antwerp, spot (francs p. quintal):										
Bessarabian . . . . .	50.50	49.00	49.00	50.00	52.00	n. q.	74.00	n. q.	71.25	
Argentine Cusquantino . . . . .	76.00	76.00	74.50	73.50	73.35	64.50	94.00	63.30	81.00	
Yellow Plate . . . . .	53.50	52.00	50.00	51.00	52.75	61.75	74.00	57.20	65.00	
London and Liverpool, parcels, c. i. f. (shillings p. 480 lbs.) 3):										
Danubian . . . . .	16/9	16/9	16 7/16	17 1/16	17 7/16	n. q.	18 6	n. 19/3	n. 17/4	
Yellow Plate . . . . .	18/-	18/-	17/9	17/9	18/-	19/10	18/2	18/2	15/6	
No. 2 White African . . . . .	17 1/4	17 1/4	17 1/4	17 1/4	17 1/4	n. q.	n. q.	n. 20/11	n. 18/1	
Milan (b): Home grown (lire p. quintal) . . . . .	51.50	52.50	52.50	52.50	55 15	71.85	50.00	68.70	51.90	
RICE (CLEANED).										
								1932	1931	
Milan (b): Maratelli (lire p. quintal) . . . . .	135.00	135.00	135.00	136.00	136.85	147.85	111.25	151.25	117.35	
Rangoon: No. 2 Burma (rupees p. 7500 lbs.) . . . . .	n. q.	n. q.	195	200	199 1/4	327 1/4	246	268 1/4	249 1/4	
Saigon (Indo-chinese piastres p. quintal):										
No. 1 Round white (25 % broken) . . . . .	...	...	...	...	...	6.27	7.02	5.48	6.73	
No. 2 Japan (40 % broken) . . . . .	...	...	...	...	...	5.84	6.32	5.11	6.20	
London (a): c. i. f. (shillings p. 112 lbs.):										
Spanish Belloch, No. 3 oiled . . . . .	12/-	12/-	12/3	12/6	12/10 1/2	13/3	12/1	13/8	11/11	
Italian good, No. 6 oiled . . . . .	10/3	9/9	9 10/16	10 7/16	12 3/16	14/-	13/1	14/-	13/7	
American Blue Rose . . . . .	14/9	n. q.	13/3	13/3	13 3/16	17/6	18/4	17/2	18/7	
Burma, No. 2 . . . . .	6/6	6 7/16	6 8/16	6/9	6/10	9/10	7/8	8/4	7/11	
Saigon, No. 1 . . . . .	6/9	6/9	6/9	7/-	7 0/16	9/3	7 1/11	8/5	8/1	
Siam, Garden, No. 1 4) . . . . .	7 7/16	7 10/16	7/9	7 7/16	7 7/16	10/7	9/5	9/5	9/5	
Tokio: Chumai (brown Japanese, average quality; yens p. koku) . . . . .	21.50	21.80	22.00	22.10	22.40	22.52	18.00	21.20	18.46	
LINSSEED.										
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	9.20	9.05	8.90	8.85	8.96	9.54	10.82	9.22	10.82	
Antwerp: Plate (francs p. quintal) . . . . .	101.00	98.00	97.50	99.00	100.25	108.75	175.00	103.25	146.00	
London, c. i. f. (l. p. long ton):										
La Plata (delivery Hull) . . . . .	8-5-0	8-6-3	8-2-6	8-5-0	8-6-7	8-11-5	9-6-3	8-8-4	8-14-1	
Bombay bold . . . . .	10-5-0	10-12-6	10-6-3	10-10-0	10-14-4	12-12-6	12-12-6	11-10-0	11-9-6	
Duluth: No. 1 Northern (cents p. 56 lbs.) . . . . .	11 1/4	n. q.	10 9/16	10 1/8	10 1/8	11 1/8	11 1/8	11 1/8	148	

n.e. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) See same note on preceding page. — 3) White Russian: 17 and 10 March: 16/10 1/4; 3 March: n. q.; 24 Feb.: 16/9; Feb. average: 12/-; — 4) From January 1932: Special. — 5) Chilian, mixed. — 6) N. 3 White African. — 7) N. 3 White African: 17/7 1/4; — 8) Rectified prices: 10 Feb.: 197 1/4; 3 Feb.: 200; 27 Jan.: 205; 20 Jan.: 207 1/4; 13 Jan.: 212 1/4; 6 Jan.: 202 1/4; January average: 206 1/4. — 9) 17 and 10 Feb.: 4.23; 3 Feb.: 4.32; 27 Jan.: n. q.; January average: 4.31. — 10) 17 and 10 Feb.: 4.07; 3 Feb.: 4.15; 27 Jan.: n. q.; January average: 4.15. — 11) May delivery.

PRODUCTS, MARKETS AND DESCRIPTION	17	10	3	27	AVERAGE 1)				Commercial Season	
	March	March	March	Feb	Feb.	March	March			
	1933	1933	1933	1933	1933	1932	1931	1931-32	1930-31	
COTTONSEED.										
Alexandria: Sakellariadis (piastres per ardeb) . . .	66.4	65.6	64.2	64.4	69.3	59.4	60.8	60.0	52.2	
London: Sakellariadis (delivery Hull: £ p. l. ton) .	6-15-0	6-13-9	6-10-0	6-10-0	6-19-1	6-2-10	6-15-7	6-3-7	5-12-6	
COTTON.										
New Orleans: Middling (cents per lb.) . . . . .	6.40	n. q.	5.95	5.99	5.95	6.80	10.56	6.20	10.07	
New York: Middling (cents per lb.) . . . . .	6.55	n. q.	6.35	6.15	6.11	6.91	10.89	6.35	10.36	
Bombay: M. g. Broach f. g. (rupees per 784 lbs.).	188	188	175	182	184	214 1/4	207	181 1/4	191 1/4	
Alexandria (talariis per kantar):										
Sakellariadis f. g. f. . . . .	12.95	13.05	12.35	12.50	12.71	12.94	17.68	12.17	17.12	
Ashmuni (Upper Egypt) f. g. f. . . . .	11.40	11.40	10.90	11.15	11.45	11.27	12.80	9.73	12.00	
Bremeu: Middling (U. S. cents per lb.) . . . . .	8.05	n. q.	7.16	7.14	7.14	8.15	12.18	7.44	11.39	
M. g. Broach fully good (pence per lb.) . . . .	n. 4.45	n. 4.45	n. 4.20	n. 4.25	n. 4.30	n. 5.34	n. 5.11	n. 4.48	n. 4.63	
Le Havre: Middling, Gulf (frances per 50 kg.) . .	234.00	231.00	211.00	213.00	214.00	246.00	373.00	216.00	348.00	
Liverpool (pence per lb.):										
Middling fair . . . . .	n. 6.46	n. 6.37	n. 5.99	n. 6.15	n. 6.14	n. 6.49	n. 7.16	n. 5.85	n. 6.93	
Middling . . . . .	5.26	5.17	4.79	4.95	4.98	5.47	5.96	4.79	5.72	
São Paulo, good fair . . . . .	n. 5.56	n. 5.47	n. 5.09	n. 5.25	n. 5.24	n. 5.69	6.24	n. 4.98	5.91	
M. g. Broach, fully good . . . . .	n. 4.63	n. 4.63	n. 4.25	n. 4.59	n. 4.59	n. 5.09	n. 4.56	n. 4.34	n. 4.25	
Sakellariadis, fully good fair . . . . .	7.29	7.21	6.84	7.02	7.12	7.42	9.66	6.76	9.08	
BUTTER.										
								1932	1931	
Copenhagen (a) Danish (Crs. p. quintal). . . . .	162.00	162.00	172.00	175.00	178.25	180.00	222.00	178.70	209.00	
Leeuwarden, Commission for the Dutch butter quotations: (florins per kg.) . . . . .	0.52	0.55	0.60	0.60	0.65	0.97	1.47	0.94	1.34	
Maastricht, auction (b): Dutch (florins p. kg.) . .	n. q.	n. q.	n. q.	n. q.	n. q.	1.08	1.56	1.27	1.38	
Hamburg, auction (c): Schleswig-Holstein butter, with quality mark (R. M. per 50 kg.) . . . . .	93.00	96.28	96.56	96.44	94.35	126.03	143.31	115.83	131.22	
Kempten (c): Allgäu butter (Pfennige p. half kg.) 2).	81	84	84	80	83	120	124	106 1/4	110	
London (d) (shillings p. cwt.):										
British blended . . . . .	116/7	116/7	116/7	116/7	116/7	135/4	144/8	131/6	140/4	
Danish . . . . .	107/-	108/-	108/-	108/-	114/-	131/7	145/6	123/1	133/4	
Irish creamery, salted . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 110/-	119/3	
Dutch . . . . .	115/-	116/-	116/-	116/-	117/4	n. q.	144/6	115/10	132/1	
Argentine . . . . .	77/-	78/-	80/-	83/-	84/6	114/7	127/-	103/10	117/7	
Siberian 3) . . . . .	n. q.	78/-	n. q.	78/-	78/-	n. q.	n. q.	n. 93/6	n. q.	
Australian, salted . . . . .	81/-	81/-	83/-	81/-	82/-	111/2	125/-	105/8	116/8	
New Zealand, salted . . . . .	83/-	82/-	84/-	85/-	85/6	116/5	126/6	110/-	119/11	
CHEESE.										
Milan (lire per quintal):										
Parmigiano-Reggiano, 1st quality of last year's production . . . . .	1,012.00	1,012.00	1,012.00	1,012.00	1,012.00	987.00	1,112.00	1,016.00	1,103.00	
Green Gorgonzola, mature, choice . . . . .	535.00	540.00	555.00	575.00	575.00	492.00	658.75	512.70	616.00	
Rome: Roman pecorino, choice (lire p. quintal) .	1,200.00	1,200.00	1,225.00	1,225.00	1,237.50	1,209.00	1,050.00	1,251.00	1,121.00	
Alkmaar: Edam 40 + (40 % butterfat), with the country's cheesemark, factory cheese, small; florins p. 50 kg.) . . . . .	23.50	24.50	24.50	25.00	24.67	25.87	36.62	24.41	32.63	
Gouda: Gouda 45 + (whole milk cheese, with the country's cheesemark, home made; florins p. 50 kg.) . . . . .	25.50	28.00	27.00	28.00	28.75	27.12	40.25	26.92	37.93	
Kempten (c): (Pfennige per half kg.) . . . . .	18	18	18	18	18	20	23	21	24	
Soft cheese, green (20 % butterfat). . . . .	74 1/2	74 1/2	74 1/2	74 1/2	74 1/2	83	98 1/2	81 1/2	97 1/2	
Emmenthal from the Allgäu (whole milk cheese) 1st quality . . . . .	74 1/2	74 1/2	74 1/2	74 1/2	74 1/2	83	98 1/2	81 1/2	97 1/2	
London (d) (shillings per cwt.):										
English Cheddar . . . . .	101/-	102/-	104/-	104/-	104/-	121/2	104/-	109/-	99/10	
Canadian . . . . .	72/6	72/-	71/-	73/-	72/-	78/1	81/6	72/9	78/9	
New Zealand . . . . .	49/6	49/-	50/-	53/-	55/3	64/11	61/9	63/2	63/2	
Liverpool (d): Engl. Cheshire, ungraded (sh p. cwt.)	65/4	65/4	65/4	65/4	75/10	137/8	115/6	103/11	94/3	

n. c. = not quoted. — n. = nominal. — a) Thursday prices. — b) Prices of preceding Tuesday. — c) Wednesday prices. — d) Average prices for weeks ending on preceding Wednesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) The method of quotation has been changed as from January 1932: actual prices are generally 3 Pf. higher than according to the former system. — 3) September 1932-Jan. 1933: Russian. — 4) Wednesday price. — 5) Provisionary average. — 6) 17 Feb.: 1,012.00. — 7) 17 Feb.: 575.00.

## IMPORT DUTIES ON CEREALS AND FLOUR

CHANGES TO BE MADE IN THE DUTIES PUBLISHED ON PAGES 160 TO 163 OF THE CROP REPORT FOR FEBRUARY 1932  
(SEE ALSO THE SAME HEADING IN THE CROP REPORTS FOR 1932 AND 1933).

COUNTRY	PRODUCT	Date when enforced	Original data per metric quintal	Data in Amer. cents per bushel or barrel
Germany. . . . .	Wheat, on export of an equivalent quantity of wheat-milling products 1) . . . . .	6 March	Rm. 0.75	4.88
" . . . . .	Rye, on export of an equivalent quantity of rye-milling products 1) . . . . .	"	" 0.50	3.04
" . . . . .	Oats, on export of an equivalent quantity of oat products (other than oats merely broken, etc.) 1) . . . . .	2) 11 March	" 8.00	27.64
" . . . . .	Oats, on export of an equivalent quantity of oats 1) . . . . .	11 March	" 8.00	27.64
France . . . . .	Maize . . . . .	9 March	3)	3)
Czechoslovakia . . . . .	Wheat and rye flour, supplementary duty . .	9 March	Cz. crs. 75.00	198.12

1) On the export of the indicated products a certificate valid for imports up to 31 July 1933 is delivered. — 2) In the case of exports authorised before 11 March, import on production of a certificate exempt. As a consequence of this measure the measure indicated on page 801 of the Crop Report for November 1932 is withdrawn. — 3) Imports during the first quarter of 1933 limited to a quota of 1,630,000 quintals (3,593,547 centals; 6,417,065 bushels). The quantities already imported will be withdrawn from this quota.

## THE TREND OF PRICES OF AGRICULTURAL PRODUCTS

In the following pages the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

But in addition to the original data summary tables are given below.

### *Percentage variations in the index-numbers for February 1933.*

COUNTRIES	compared with those for January, 1933		compared with those for February, 1932	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general
Germany . . . . .	+ 1.6	+ 0.2	— 13.1	— 8.6
England and Wales . . . . .	— 0.9	— 1.0	— 9.4	— 11.2
Argentina . . . . .	— 2.1	—	— 13.8	—
Canada . . . . .	— 1.4	— 0.5	— 17.5	— 8.1
Estonia . . . . .	— ...	—	— ...	—
United States . . . . . { a) b)	— 3.9	—	— 18.3	—
	— 4.0	— 2.0	— 19.2	— 9.8
Finland . . . . .	— ...	—	— ...	—
Hungary . . . . .	+ 1.4	+ 1.2	— 20.0	— 16.2
Italy . . . . .	— 2.9	— 1.3	— 12.6	— 9.5
New Zealand . . . . .	— 0.1	—	— 4.8	—
Netherlands . . . . .	— 2.1	— 1.2	— 14.5	— 10.9
Poland . . . . .	+ 9.3	+ 3.2	— 7.3	— 9.9
Yugoslavia . . . . . { c) d)	+ 0.2	+ 1.2	— 6.8	+ 1.6
	+ 5.1		+ 4.3	

a) Bureau of Agricultural Economics — b) Bureau of Labor. — c) Vegetable products — d) Animal products.

# **INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER \***

COUNTRIES AND CLASSIFICATIONS	Feb. 1933	Jan. 1933	Dec 1932	Nov. 1932	Oct. 1932	Sept. 1932	Feb. 1932	Feb 1931	Year	
									1932 1)	1931
<b>GERMANY</b> (Statistisches Reichsamt) 1913 = 100.										
Foodstuffs of vegetable origin . . . . .	97.0	95.7	96.6	99.1	100.3	104.2	119.5	114.1	112.0	119.3
Livestock . . . . .	60.5	57.9	60.6	63.5	66.2	67.5	65.7	90.6	65.5	83.0
Livestock products . . . . .	88.0	87.5	96.9	103.4	98.7	94.8	95.5	119.9	93.9	108.4
Feeding stuffs . . . . .	81.8	81.9	83.2	84.4	85.2	87.1	93.5	93.0	91.6	101.9
Total agricultural products . . . . .	82.2	80.9	84.4	87.8	88.0	89.0	94.6	105.9	91.3	103.8
Fertilizers 2). . . . .	73.4	72.6	70.2	69.8	69.4	69.2	72.0	83.1	—	76.5
Agricultural dead stock . . . . .	111.5	112.5	113.1	113.6	113.9	114.2	118.9	133.3	116.1	130.7
Finished manufactures (* Gebrauchs- güter *) . . . . .	110.5	111.4	112.0	112.5	113.0	113.8	123.6	145.0	117.5	140.1
Wholesale products in general . . . . .	91.2	91.0	92.4	93.9	94.3	95.1	99.8	114.0	96.5	110.9
<b>ENGLAND AND WALES</b> (Ministry of Agriculture and Fisheries) Average of corresponding months 1911-13 = 100.										
Agricultural products . . . . .	106	107	103	101	100	104	117	126	109	120
Feeding stuffs . . . . .	91	92	90	90	89	92	97	77	95	83
Fertilizers . . . . .	90	90	89	88	87	87	91	100	90	96
Wholesale products in general 3) . . . . .	90.6	91.5	91.4	91.6	91.5	94.6	102.0	100.6	94.9	97.7
<b>ARGENTINA</b> (Banco de la Nación Argentina) 1926 = 100.										
Cereals and linseed . . . . .	52.6	53.8	52.2	55.5	60.0	64.1	59.1	54.5	59.5	55.8
Meat . . . . .	57.7	55.2	56.8	60.9	65.3	68.3	74.6	96.8	69.8	94.3
Hides and skins . . . . .	49.1	54.5	51.4	54.7	54.6	61.7	61.8	70.0	53.1	64.5
Wool . . . . .	40.8	42.1	36.8	40.7	45.2	48.0	49.4	55.2	44.2	61.2
Dairy products . . . . .	52.3	53.9	53.3	53.7	53.7	56.2	58.9	72.9	56.9	74.5
Forest products . . . . .	71.8	70.9	68.5	64.9	65.2	62.5	78.3	108.7	68.4	99.3
Total agricultural products . . . . .	52.4	53.5	51.9	55.1	59.0	62.7	60.8	63.9	59.1	63.8
<b>CANADA</b> (Internal Trade Branch of the Dominion Bureau of Statistics) 1926 = 100.										
Field products (grain, etc) . . . . .	36.0	35.1	33.6	36.6	36.8	38.9	43.7	45.0	40.7	43.6
Animals and animal products . . . . .	54.7	57.9	57.8	56.9	58.4	60.2	66.2	87.5	60.9	77.6
Total Canadian farm products . . . . .	43.0	43.6	42.7	44.2	44.9	46.9	52.1	60.9	48.3	56.3
Fertilizers . . . . .	72.9	72.3	72.3	72.3	72.3	72.0	72.0	89.3	71.8	82.6
Consumer's goods (other than foodstuffs, etc) . . . . .	76.1	76.7	78.2	78.3	78.6	78.9	79.7	82.3	78.8	80.0
Wholesale products in general . . . . .	63.6	63.9	64.0	64.8	65.0	66.9	69.2	75.5	67.0	72.1
<b>ESTONIA</b> (Central Bureau of Statistics) 1913 = 100.										
Commodities imported 4) . . . . .	..	..	111	112	112	112	112	123	113	129
Commodities exported . . . . .	..	58	59	63	57	54	64	82	58	76
Agricultural products imported and exported 4) . . . . .	..	..	74	77	72	70	78	95	74	91

\*) For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication "Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer" (Rome, 1930), as well as to pages 77 to 79 of the "Crop Report" of January 1932 and to page 517 of the "Crop Report" of July 1932.

1) Most data for 1932 are provisional. — 2) From July 1932 new series — 3) Calculated by the "Statist", reduced to base-year 1913 = 100. — 4) From January 1932 the price of rye is excluded from the calculations.

COUNTRIES AND CLASSIFICATIONS	Feb	Jan.	Dec.	Nov.	Oct	Sept.	Feb	Feb	Year	
	1933	1933	1932	1932	1932	1932	1932	1931	1932	1931
									1)	
UNITED STATES										
(Bureau of Agricultural Economics)										
Average 1909-10 to 1913-14 = 100.										
Cereals . . . . .	34	34	33	34	36	41	51	75	44	63
Fruits and vegetables . . . . .	57	59	59	57	59	68	68	109	71	98
Meat animals . . . . .	53	51	52	57	60	67	65	106	63	93
Dairy products . . . . .	62	68	69	68	68	67	79	101	70	94
Poultry and eggs . . . . .	57	96	121	115	102	84	70	79	80	96
Cotton and cottonseed . . . . .	44	45	43	47	51	57	47	76	46	63
Total agricultural products . . . . .	49	51	52	54	56	59	60	90	57	80
Commodities purchased by farmers 2) . . . . .	.04	105	106	106	107	106	116	137	111	129
Agricultural wages 2) . . . . .	—	—	—	—	84	—	3) 98	3) 129	90	116
UNITED STATES										
(Bureau of Labor)										
1926 = 100.										
Grains . . . . .	32.7	32.9	31.7	33.2	34.4	37.4	46.1	60.4	39.4	53.0
Livestock and poultry . . . . .	40.1	37.8	38.7	41.9	45.0	51.2	50.3	69.6	48.3	63.9
Other farm products . . . . .	44.2	48.7	51.3	53.9	52.1	52.1	52.7	73.7	51.4	69.2
Total agricultural products . . . . .	40.9	42.6	44.1	46.7	46.9	49.1	50.6	70.1	48.2	64.8
Agricultural implements . . . . .	83.1	84.5	84.5	84.6	84.7	84.9	85.1	94.7	84.9	94.0
Fertilizer materials . . . . .	61.5	62.3	63.1	63.3	63.4	63.6	64.8	81.1	66.9	76.8
Mixed fertilizers . . . . .	62.4	62.7	65.6	65.6	66.5	66.9	73.7	89.1	69.4	82.0
Cattle feed . . . . .	40.6	38.2	37.1	40.8	42.7	45.9	48.2	71.6	45.9	62.7
Non-agricultural commodities . . . . .	63.7	64.9	66.5	67.5	68.1	68.7	69.6	77.1	68.4	73.0
Wholesale products in general . . . . .	59.8	61.0	62.6	63.9	64.4	65.3	66.3	75.5	64.9	71.1
FINLAND										
(Central Bureau of Statistics)										
1926 = 100.										
Cereals . . . . .	..	89	89	90	89	87	94	74	90	77
Potatoes . . . . .	..	78	71	69	68	68	68	68	71	68
Fodder . . . . .	..	69	66	67	67	65	71	62	69	63
Meat . . . . .	..	63	57	54	56	61	63	73	61	64
Dairy products . . . . .	..	73	77	80	76	74	84	75	76	76
Total agricultural products . . . . .	..	73	72	74	72	72	78	74	74	72
Wholesale products in general . . . . .	..	90	90	91	90	90	93	86	90	84
HUNGARY										
(Central Bureau of Statistics)										
1913 = 100.										
Agricultural and livestock products . . . . .	72	71	68	69	75	80	90	80	—	—
Wholesale products in general . . . . .	83	82	81	82	80	90	99	92	—	—
ITALY										
(Consiglio Provinciale dell'Economia Corporativa di Milano)										
1913 = 100.										
National agricultural products . . . . .	305.65	314.67	322.97	327.61	326.81	328.66	349.57	343.75	339.63	343.11
Wholesale products in general . . . . .	292.64	296.49	298.95	301.89	304.33	306.70	323.49	357.92	309.91	341.57
NEW ZEALAND										
(Census and Statistics Office)										
Average 1909-13 = 100.										
Dairy produce . . . . .	83.3	82.7	83.9	94.5	102.4	96.6	92.2	102.4	93.8	98.9
Meat . . . . .	119.2	123.0	108.7	100.3	95.5	100.0	118.2	140.2	109.1	130.1
Wool . . . . .	64.3	61.1	52.7	60.0	66.8	66.4	64.7	57.0	61.3	67.9
Other pastoral produce . . . . .	58.9	59.8	61.7	62.0	63.1	53.4	67.9	74.3	62.2	76.7
All pastoral and dairy produce . . . . .	85.1	85.0	79.9	84.2	88.1	86.0	89.3	97.3	86.4	96.5
Field products . . . . .	107.0	116.4	96.8	95.6	95.4	95.7	113.0	121.5	101.7	115.5
Total agricultural products . . . . .	85.7	85.8	80.4	84.5	88.3	86.2	90.0	98.0	86.8	97.0

1) Most data for 1932 are provisional. — 2) 1910-14 = 100. — 3) January.

COUNTRIES AND CLASSIFICATIONS	Feb.	Jan.	Dec.	Nov.	Oct.	Sept.	Feb.	Feb.	Year	
	1933	1933	1932	1932	1932	1932	1932	1931	1932	1931
<b>NORWAY 1)</b>										
(Kgl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals . . . . .	119	119	116	116	116	118	122	104	125	112
Potatoes . . . . .	81	79	75	72	75	73	140	181	130	150
Pork . . . . .	90	99	98	95	100	94	93	84	96	86
Other meat . . . . .	107	106	106	101	105	109	120	182	218	138
Eggs . . . . .	103	93	111	142	120	109	87	101	108	96
Dairy products . . . . .	118	118	128	131	131	132	130	138	156	129
Concentrated feeding stuffs . . . . .	101	103	103	104	104	106	108	103	121	103
Maize . . . . .	90	89	87	91	92	95	83	81	108	87
Fertilizers . . . . .	92	91	89	87	81	89	91	96	105	90
<b>NETHERLANDS</b>										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Vegetable products . . . . .	41	40	41	43	44	46	60	66	2) 58	2) 72
Animal products . . . . .	50	50	50	55	55	51	54	74	2) 57	2) 77
Total agricultural products . . . . .	47	48	48	51	52	50	55	72	2) 57	2) 76
Agricultural wages . . . . .	83	83	83	83	83	83	95	100	2) 93	2) 99
Wholesale products in general 3) . . . .	50.1	50.7	51.4	52.1	52.1	51.4	56.2	70.4	77.8	65.7
<b>POLAND 4)</b>										
(Central Bureau of Statistics)										
1917 = 100.										
Vegetable products . . . . .	49.5	46.2	38.8	40.8	41.8	42.7	53.8	45.8	49.8	53.9
Worked-up plant products . . . . .	61.8	54.1	51.1	52.7	53.8	55.2	64.5	59.8	61.3	65.9
Total products of plant origin . . . . .	55.6	48.0	44.8	46.7	47.8	48.9	59.3	52.6	55.6	60.0
Animals . . . . .	40.1	37.3	37.6	39.2	41.4	43.7	37.8	58.9	43.1	55.8
Dairy products . . . . .	49.6	52.8	55.4	67.1	53.5	55.8	68.5	80.1	55.4	68.0
Total products of animal origin . . . .	44.3	43.8	44.9	50.1	46.7	49.0	49.5	67.7	48.2	60.8
Total agricultural products . . . . .	50.5	46.2	44.8	48.1	47.3	48.9	54.5	58.2	52.0	59.7
Fertilizers . . . . .	112.9	110.8	107.6	107.6	112.9	112.9	94.1	124.7	105.5	120.2
Industrial products . . . . .	64.2	64.7	65.8	67.1	68.5	69.7	73.0	83.9	69.6	79.4
Wholesale products in general . . . . .	58.2	56.4	56.2	58.5	58.8	60.2	64.6	72.1	61.6	70.5
<b>YUGOSLAVIA</b>										
(National Bank)										
of the Kingdom of Yugoslavia <sup>1)</sup>										
1926 = 100.										
Vegetable products . . . . .	65.5	65.4	61.6	59.7	58.1	57.7	70.3	73.5	67.5	96.7
Animal products . . . . .	60.1	57.2	57.3	60.2	58.5	56.8	57.6	78.1	56.6	97.7
Industrial products . . . . .	73.0	73.0	68.1	67.6	67.5	64.0	68.8	72.1	66.2	80.2
Wholesale products in general . . . . .	68.4	67.6	64.8	64.7	63.9	61.8	67.3	74.8	65.2	88.8

1) The agricultural years refer to the period April 1-March 31. — 2) Agricultural year July 1-June 30. — 3) Calculated by the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100. — 4) Average data for the year 1932 are provisional.

# RATES OF FREIGHT

(Rates for entire cargoes)

VOYAGES	17	10	3	24	AVERAGE				
	March	March	March	Feb.	Feb.	March	March	Commercial	
	1933	1933	1933	1933				Season	
					1933	1932	1931	1931-32	1930-31
<b>SHIPMENTS OF WHEAT AND MAIZE.</b>									
Danube to Antwerp/Hamburg . . . (shill. per long ton)	14/3	14/3	n. q.	n. q.	n. q.	14/7	13/9	14/6	13/11
Black Sea to Antwerp/Hamburg . . . (shill. per long ton)	9/7 1/2	9/7 1/2	10/-	10/3	10/5	n 11/6	10/7	10/10	10/10
St. John to Liverpool 1) . . .	1/6	1/6	1/6	1/6	1/6	1/7 1/2	1/6	1/7	1/6
Port Churchill to United Kingdom . . . (shill. per long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	—	—	—	—
Montreal to United Kingdom . . . (shill. per long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.
Gulf to United Kingdom . . . (480 lbs)	1) 2/3	1) 2/3	1) 2/3	1) 2/3	1) 2/3	n.0.09	2/-	0 08	1/10
New York to Liverpool 2) . . .	1/6	1/6	1/6	1/6	1/6	n.0.10 1/2	1/6	2/6	2/3
Northern Range to U. K./Continent . . .	n. q.	n.0.05 1/2	n.0.05 1/2	n. q.	n. q.	n.0.09	1/10	1/8	1/6
North Pacific to United Kingdom (sh. per long ton)	n. q.	20/-	20/-	21/-	n. 22/3	23/11	21/10	n. 22/2	22/3
Vancouver to Yokohama 1) (gold \$ per sh. ton)	2.00	2.00	2.00	2.05	2.05	2.35	2.75	2.30	2.72
La Plata Down River 2) to U. K./Continent . . .	14/-	12/6	12/6	13/6	14/6	16/11	16/11	16/-	16/4
La Plata Up River 3) to U. K./Continent . . . (shill. per long ton)	16/-	14/-	14/-	15/-	16/2	18/6	18/7	17/6	18/-
Karachi to U. K./Continent 4) . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	19/9	n. q.	19/3
Western Australia to U. K./Continent . . .	22/6	23/-	23/6	25/-	25/10 1/2	28/7	29/4	26/-	29/8
<b>SHIPMENTS OF RICE</b>									
Saigon to Europe . . . (shill. per long ton)	1) n. 20/-	1) n. 20/-	1) n. 20/-	25/-	26.6	1) 22/4	24/10	23/5	24/3
Burma to U. K./Continent . . . (shill. per long ton)	n 22/6	22/6	22/6	23/9	24/2	n. 25/6	24/1	n. 23/3	23/9

n. q. — not quoted. — n = nominal. — 1) Rates for parcels by liners. — 2) "Down River" includes the ports of Buenos Aires and La Plata. — 3) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine, Santa-Fé and Paraná) are subject to an extra rate of freight. — 4) The original data being quoted in "scale terms", 10% is added to arrive at rates per long ton. — 5) Freight in gold \$ per 100 lbs. (in the case of a loss of 30% in the value of the shilling, 10 \$ c. per 100 lbs. are equal to 2/10 per quarter). — 6) Vancouver-Shanghai (gold \$ p. short ton.): Feb., 2.30; March; 2.20.

# EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT OF THEIR PARITY WITH THE DOLLAR

COUNTRY	Exchange	Exchange rates				Percentage bonus (+) or loss (-) (1)			
		17	10	3	24	17	10	3	24
		March	March	March	Feb.	March	March	March	Feb.
		1933	1933	1933	1933	1933	1933	1933	1933
Germany a) . . . . .	Berlin	4.186	4 150	4.213	4.213	+ 0.3	+ 1.2	— 0.4	— 0.4
Argentina b) . . . . .	New York	25.380	n. q.	25.750	25.750	— 40.1	n. q.	— 39.3	— 39.3
Belgium a) . . . . .	Brussels	35.632	n. q.	35.405	35.520	+ 0.9	n. q.	+ 1.6	+ 1.2
Canada b) . . . . .	New York	84.250	n. q.	86 125	82.937	— 15.8	n. q.	— 13.9	— 17.1
Denmark a) . . . . .	Copenhagen	6.505	n. q.	6 530	6 592	— 42.6	n. q.	— 42.0	— 43.4
Egypt . . . . .	London 2)	17.331	n. q.	17.237	17.056	— 28.8	n. q.	— 29.2	— 29.9
Great Britain b) . . . . .	Paris 3)	25.360	n. q.	25 325	25.350	+ 0.6	n. q.	+ 0.8	+ 0.7
France a) . . . . .	New York 4)	17.520	n. q.	17 550	17 550	+ 0.2	n. q.	+ 0.3	+ 0.3
Indo-China . . . . .	London	26.000	n. q.	26.036	25.810	— 28.8	n. q.	— 28.7	— 29.3
Hungary b) . . . . .	Milan	19.360	n. q.	19.510	19.520	— 1.9	n. q.	— 2.6	— 2.7
India b) 5) . . . . .	New York	22.000	n. q.	21.060	20.310	— 55.8	n. q.	— 57.7	— 59.2
Italy a) . . . . .	Amsterdam	2.474	n. q.	2.471	2.472	+ 0.6	n. q.	+ 0.7	+ 0.6
Japan b) . . . . .	Warsaw	8.895	n. q.	8.894	8.904	+ 0.2	n. q.	+ 1.2	+ 0.1
Netherlands a) . . . . .	New York	0.610	n. q.	0.605	0.600	+ 2.0	n. q.	+ 1.2	+ 0.3
Poland a) . . . . .	Stockholm	5.465	5.400	5.485	5.525	— 31.7	— 30.9	— 32.0	— 32.5
Rumania b) . . . . .	Prague	33.500	n. q.	33.620	33.640	+ 0.7	n. q.	+ 0.4	+ 0.3
Sweden a) . . . . .									
Czechoslovakia a) . . . . .									

a) Value of the United States dollar expressed in national currency. — b) Value of the national currency expressed in United States cents — 1) The percentage represents the premium or the loss as far as possible on the national exchange. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piastre and the French franc changed only slightly the exchange rate of the latter only is given. — 4) As the rate on Budapest is lacking the relation has been calculated from the rate on New York. — 5) These rates have been obtained by converting the original quotations in pence per rupee into cents per rupee.



# RECIPROCAL PARITIES OF THE VARIOUS CURRENCIES IN WHICH ARE QUOTED THE PRICES IN THE MONTHLY AND THE QUARTERLY PRICE REVIEWS (1)

COUNTRIES	Unit of Currency	Germany	Argentina	Belgium	Canada United States	Denmark	Egypt	France Indo-China (2)	Great Britain	Hungary	India	Italy	Japan	Netherlands	Poland	Rumania	Czechoslovakia	Former Latin monetary union (3)
Germany . . . . .	Reichsmark	1.000	0.561	8.566	0.238	0.889	4.819	6.080	0.979	1.352	0.653	4.526	0.478	0.593	2.123	39.825	8.040	1.235
Argentina . . . . .	Paper peso	1.782	1.000	15.263	0.424	1.584	8.586	10.833	1.744	2.427	1.163	8.064	0.851	1.056	3.872	70.959	14.326	2.200
Belgium . . . . .	Franc	0.117	0.065	1.000	0.028	0.104	0.563	0.710	0.114	0.159	0.076	0.528	0.056	0.069	0.248	4.649	0.939	0.145
Canada . . . . .	Dollar	4.198	2.356	35.959	1.000	3.731	20.230	25.524	4.110	5.718	2.740	19.000	2.006	2.488	8.914	167.181	33.751	5.183
United States . . . . .																		
Denmark . . . . .	Crown	1.125	0.631	9.637	0.268	1.000	5.422	6.840	1.101	1.532	0.734	5.092	0.538	0.667	2.389	44.803	9.045	1.389
Sweden . . . . .	Plastre	0.207	0.116	1.777	0.049	0.184	1.000	1.262	0.203	0.283	0.135	0.939	0.099	0.123	0.441	8.264	1.668	0.256
Egypt . . . . .	Plastre	0.164	0.092	1.409	0.039	0.146	0.793	1.000	0.161	0.224	0.107	0.744	0.079	0.097	0.349	6.550	1.322	0.203
France . . . . .	Plastre (2)																	
Indo-China . . . . .																		
Great Britain . . . . .	Shilling	1.021	0.573	8.756	0.243	0.908	4.923	6.211	1.000	1.391	0.667	4.623	0.488	0.605	2.169	40.680	8.213	1.261
Hungary . . . . .	Pengó	0.734	0.412	6.289	0.175	0.653	3.580	4.464	0.720	1.000	0.479	3.323	0.351	0.435	1.559	29.240	5.903	0.905
India . . . . .	Rupce	1.532	0.860	13.125	0.365	1.362	7.384	9.316	1.500	2.087	1.000	6.935	0.732	0.908	3.254	61.020	12.319	1.892
Italy . . . . .	Lira	0.221	0.124	1.892	0.053	0.196	1.065	1.343	0.216	0.301	0.144	1.000	0.106	0.131	0.469	8.799	1.776	0.273
Japan . . . . .	Yen	2.092	1.174	17.924	0.498	1.860	10.084	12.723	2.049	2.850	1.366	9.471	1.000	1.240	4.443	83.333	16.824	2.583
Netherlands . . . . .	Florin	1.687	0.947	14.454	0.402	1.450	8.132	10.260	1.652	2.298	1.101	7.637	0.806	1.000	3.583	67.200	13.567	2.083
Poland . . . . .	Zloty	0.471	0.264	4.034	0.112	0.419	2.269	2.863	0.461	0.641	0.307	2.131	0.225	0.279	1.000	18.755	3.786	0.581
Rumania . . . . .	Leu	0.025	0.014	0.215	0.006	0.022	0.121	0.153	0.025	0.034	0.016	0.114	0.012	0.015	0.053	1.000	0.202	0.031
Czechoslovakia . . . . .	Crown	0.124	0.070	1.065	0.030	0.111	0.599	0.756	0.122	0.169	0.081	0.563	0.059	0.074	0.264	4.953	1.000	0.154
Former Latin monetary union (3) . . . . .	Gold Franc	0.810	0.455	6.938	0.193	0.720	3.903	4.925	0.793	1.103	0.529	3.666	0.387	0.480	1.720	32.258	6.512	1.000

(1) Each figure gives the equivalent in the currency of the country indicated at the head of the respective column of the currency unit indicated at the beginning of the respective line.  
(2) 1 Gold piastre equals 10 francs. — (3) Data for purpose of comparison.

# MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

*The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.*

## THE CEREAL MARKET SITUATION AND PRODUCTION PROSPECT

The situation regarding wheat supplies and requirements, which was revised last month, led to the forecast of a further considerable increase in the stocks of the exporting countries during the current season. Later information received also confirms this forecast.

Canada has quite recently published the estimate of total wheat stocks in existence in the country on 1 April last. This figure permits the statistical situation as regards Canadian wheat to be fairly exactly ascertained and, at the same time, furnishes a sufficiently approximate indication of the possible level of Canadian end-of-season stocks.

### *The wheat situation in Canada.*

(in million bushels)

	Season 1931-32	Season 1932-33
* Stocks in existence on 1 August . . . . .	134	131
New crop . . . . .	321	428
Total supplies for the season . . . . .	455	559
Stocks in existence on 1 April . . . . .	243	313
Quantities disposed of from 1 August to 31 March . . . . .	212	246
of which :		
Export . . . . .	141	193
Home consumption . . . . .	71	53

An examination of these figures leads to the following conclusions. Canadian exports during the first eight months of this season have exceeded by about 40 % those of the same period of the preceding season. Despite this increase in exports, stocks on 1 April were much larger than last year.

The quantities utilised in the country in the first eight months seem to be much smaller. As it is nevertheless improbable that in such a short period of time home consumption could have decreased by so much, it must be considered that the Canadian crop of 1932 was under-estimated to about the same extent as in the previous year when the difference was about 20 millions bushels.

The quantity of stocks of Canadian wheat in existence in the country permits the forecast that, at the end of the season, their level will be much higher than on 1 August 1932. During the four months from 1 April to 31 July of last year, 112 million bushels were disposed of, 46 for seed and home consumption and 66 for export. If, in the same four months of this year, the same quantity is disposed of, stocks on 31 July will amount to about 200 million bushels, showing an increase of 70 millions on those of the preceding year; supposing that exports from April to July follow the same trend as in the first eight months, showing an increase of 40 % on last year, stocks at the end of the season will be still larger by about 50 millions than those of last year.

If Canada succeeds, therefore, in exporting, during the whole of this season, 40 % more than last year, that is, a total of 290 million bushels, this increase can only take place at the expense of other exporting countries as world import requirements are much smaller than in 1931-32. Although some estimates made at the beginning of the season were more optimistic regarding world requirements, they have recently been modified to a lower level so that the differences between the various estimates are at present greatly reduced as may be seen from the following table :—

*Estimates of World Wheat Import Requirements in 1932-33.*

(in million bushels)

	1st estimate	2nd estimate
Broomhall . . . . .	August 1932 = 704	March 1933 = 664
Stanford University . . . . .	August " = 700	March " = 645
International Institute of Agriculture . . . . .	October " = 630	March " = 630

These estimates indicate, therefore, a decrease in world requirements of 140 to 170 million bushels in comparison with last season, when total requirements were 800 millions, whereas the decrease in exportable supplies is only 80 million bushels.

Even taking into account the largest estimate of import requirements (Broomhall), there is found to be a decrease compared with the past season of 140 million bushels. This decrease is already nearly completely balanced by the decrease of 132 million bushels in this year's exportable surplus of the group of secondary exporting countries (U. S. S. R., Danubian countries, and North Africa) and in the quantities afloat.

Even in this case, therefore, the four large wheat exporting countries, while having larger surpluses than in 1931-32, can export during this season a total

quantity only equivalent to that of last year. If the import requirements then turn out to be below the estimate under consideration, the total exports of Canada, the United States, Argentina and Australia will not reach the quantities of last season.

In any case, as the Canadian exports are calculated to increase this year by about 80 million bushels, there is reason to forecast at least a corresponding decrease in the exports of the other three countries.

*Exportable supplies and world import requirements of wheat  
at the beginning of the season and on 1 March 1933.*

(Million bushels).

	SEASON 1932-33			SEASON 1931-32		
	Total exportable surplus	Exports 1 Aug 1932/ 28 Feb 1933	Balance exportable as on 1 March 1933	Total exportable surplus	Balance exportable as on 1 March 1932	Balance exportable as on 1 Aug. 1932
Canada . . .	440	176	264	334	213	125
United States .	380	38	342	456	389	334
Argentina . . .	190	55	135	176	107	40
Australia . . .	195	88	107	188	103	37
U S S R, Danubian countries, North Africa, etc	47	33	14	171	26	—
Quantities afloat	30	—	60	38	60	29
TOTALS	1,282	1) 360	922	1,363	898	565
	Probable import requirements for the whole season	Requirements met by exports 1 Aug 1932/ 28 Feb 1933	Requirements to be met by exports 1 March to 31 July 1933	Import requirements for the whole season	Requirements met by exports 1 Aug 1931/ 28 Feb 1932	Requirements met by exports 1 March to 31 July 1932
Europe and other importing countries . .	630	360	270	793	1) 465	333

1) The total export in the first seven months of the season 1932-33 is, in fact, 390 million bushels but it has been reduced to 360 million because 30 million have been transferred to the quantity afloat.

For the first seven months of 1931-32 also, the total export of 487 million was reduced to 465, the difference of 22 million increasing the quantity afloat.

The United States, which in 1931-32 exported about 120 million bushels, shipped, in the first seven months of this season less than 40 millions and it seems improbable, owing to the current level of American prices, that for the whole of the season, a total of 60 million will be reached, resulting in a decrease of about 60 million bushels. The remainder of the decrease should be distributed between Australia and Argentina with the smaller proportion for Australia, which may more easily sell its wheat, thanks to the Ottawa Agreements and the good demand of its natural market, the Far East. Lastly, taking into account the principal exporting countries, it may be anticipated that stocks at the end of

the season will be at nearly the same level as in the preceding year in the United States, slightly larger in Australia and considerably larger in Canada and Argentina.

Despite the importance of stocks to be carried over to the next season, the market is now beginning to feel, to an increasing extent, the influence of reports on the volume of the next crop, which are based on the area sown and the appearance of standing crops after the winter.

As regards the areas sown to winter wheat, there are not available sufficiently complete figures for all of the countries, to allow an exact calculation of their variation compared with last year. According to more recent information, the impression is obtained that the winter sowings in Europe show an increase of several hundred thousand acres, whereas a decrease of about 4,200,000 acres may be counted on in the U. S. S. R., of 500,000 in North America, 1,200,000 in India and 500,000 in North Africa. If account is taken, moreover, of the fact that the area damaged in the United States by drought and winter adversities is this year extremely large, being estimated at 30 % of the total area, it may be calculated in a largely approximate manner that the area of winter wheat to be harvested next summer will be, for all of the producing countries together, 10 to 12 million acres smaller than that of 1932. It is not yet possible to have any indication of the total area of the spring sowings, which are now in full swing in the northern hemisphere. According to an inquiry made on 1 March regarding the intentions of farmers, the spring sowings in the United States will show a slight decrease of 2.5 % ; but when it is considered that the price of wheat at Chicago has risen since 1 March to reach, in the last few days, an increase of over 30 % compared with the level at the beginning of March, it is probable that farmers' intentions will be modified, especially as a very poor crop of winter wheat is anticipated. The intentions of Canadian farmers will be known on 10 May ; the probability has recently been discussed of a reduction of sowings by 5-10 %, but even if this were well-founded it could not be judged what reaction the change taking place in the situation in the United States would have on the intentions of Canadian producers. The U. S. S. R. is encountering rather serious difficulties in collecting and distributing the seed necessary for sowing and consequently doubt is expressed as to the possibility of completely covering the area forecast in the plan, which provides for an increase of 3 million acres or 7 % on the 53.6 million acres of wheat sown in the spring of 1932. In the southern hemisphere the land is now being prepared for sowings in May-June, the extent of which will be influenced by the production prospects of the northern hemisphere and by the prices current during the sowing period.

As regards the situation of standing crops, it may be said that, in general, they have, in Europe, wintered very well and that the damage caused by seasonal adversities was this year much below the normal and more or less insignificant. Crop conditions at mid-April were very satisfactory in all countries ; in the western part of Europe there were a few reports of drought but some rains, accompanied by a spell of cold weather, have occurred in the last few days in parts of the areas affected by drought. The prospect of a heavy wheat crop in Europe, which may exceed the exceptional crop of 1932, is still not to be excluded.

In the United States, winter conditions were completely unfavourable for the growth of winter wheat, frost and dry weather having destroyed a large proportion of the sowings. The area abandoned is calculated at about 30 % of the total and crop condition on 1 April was the worst recorded for many years. To this crop condition, on the basis of correlation calculations, there corresponds a total production of about 334 million bushels, which would be an extremely poor crop, even in comparison with that of last year, which was one of the worst recorded in the United States.

*Winter wheat in the United States.*

YEAR OF PRODUCTION	AREA		% of area sown not harvested	Crop condition 1 April
	sown	harvested		
	(thousand acres)			
1933 . . . . .	39,902	1) 27,931	30.0	59.4
1932 . . . . .	40,420	33,656	16.7	75.8
1931 . . . . .	43,520	41,357	5.0	88.8
1930 . . . . .	43,562	39,463	9.4	77.4
1929 . . . . .	43,340	40,580	6.4	82.7
1928 . . . . .	47,317	36,213	23.5	68.8
1927 . . . . .	43,373	37,723	13.0	84.5
1926 . . . . .	39,887	36,987	7.3	84.1
1925 . . . . .	39,951	31,346	21.5	68.7
1924 . . . . .	38,916	35,656	8.4	83.0
1923 . . . . .	46,091	39,508	14.3	75.2
1922 . . . . .	47,930	42,358	11.6	78.4
1921 . . . . .	45,625	43,414	4.8	91.0

1) Acreage estimated to be harvested, on the basis of the situation on 1 April.

This forecast, made a long time before harvest, can only be considered as a very rough indication of the total volume of the crop which is still subject to the course of seasonal conditions during about three months and may consequently vary.

But, if the area abandoned this year turns out to be as large as is estimated, there can be no doubt that the crop will be very poor and that its quantity, even given ideal weather up to harvest time, cannot show any substantial change compared with the forecasts. In fact, it is taken into consideration that, for the 28 million acres now estimated to be harvested, the yield is forecast at 12 bushels per acre, it would be necessary, to obtain a crop equivalent in volume to that of 1932 (462 million bushels), that the yield should in June reach 16.5 bushels per acre, which would be an exceptionally high level for the wheat crop in the United States.

In India, the crop is considered to be poor due to drought in January followed by cold, unfavourable weather in subsequent months. The estimate of total production in India is not yet available 1) but the first forecast communicated for

At the last moment there has been received the first estimate of wheat production in India of 204.3 million centals (340.5 million bushels).

the Punjab which furnishes nearly one third of the total, permits the forecast that the current production will not fully reach that of 1932. In this case, it would be probable that India would be obliged, during the coming season, to have recourse to the foreign market in order to cover its requirements.

*Production of wheat in India.*

YEAR OF PRODUCTION	FIRST ESTIMATE				FINAL ESTIMATE			
	Punjab		India		Punjab		India	
	000 centals	000 bushels	000 centals	000 bushels	000 centals	000 bushels	000 centals	000 bushels
1933 . . . . .	65,968	109,947	...	...	...	...	...	...
1932 . . . . .	75,130	125,216	208,589	347,648	70,605	117,675	202,182	336,971
1931 . . . . .	81,267	135,445	208,074	346,789	79,744	132,907	208,432	347,387
1930 . . . . .	87,853	146,421	220,976	368,293	91,259	157,099	234,506	390,843
1929 . . . . .	69,171	115,285	184,419	307,365	76,675	127,792	192,438	320,731
1928 . . . . .	74,144	123,573	198,688	331,147	61,914	103,189	174,518	290,964
1927 . . . . .	70,224	117,040	194,925	324,875	76,854	128,091	200,995	334,992
1926 . . . . .	64,915	108,192	192,237	320,395	75,757	126,261	194,790	324,651
1925 . . . . .	65,565	109,275	193,178	321,963	66,774	111,291	198,598	330,997

In North Africa the weather conditions have been very favourable to the crops, which benefited by good rains in March and at the beginning of April. Apart from damage by sirocco during the period of maturity, high yields are expected in the countries of this region which may largely compensate for the decrease in sowings.

G. CAPONE.

## CEREALS

*Germany* : The winter was mostly mild and dry ; snow and severe cold were of short duration. Towards the end of the winter in many districts frost occurred in the absence of snow-cover. Despite the generally thin snow-cover, winter sowings as a whole came through the winter well. The extent of winter losses cannot yet be estimated. Spring operations could this year be begun relatively early.

Crop condition of winter spelt at the beginning of April was 2.5 against 2.3 at the beginning of December 1932 and 3.1 at the beginning of April 1932. For the condition of wheat, rye and winter barley see table.

*Austria* : At the beginning of March temperatures rose rapidly and the snow melted up to 2,000 metres. The fairly frequent precipitation towards the end of the first week amounted only to a very small quantity. Towards the middle of the month growth began. At the beginning of the third decade temperatures fell considerably and precipitation was abundant. Only towards the end of March was it again warmer.

Winter sowings began to develop in the middle of March and at that date were everywhere healthy. Preparations for spring sowings were also begun. At the beginning of April the sowings were well advanced, especially in more favourably situated areas.

*Belgium* : At the beginning and towards the middle of March there were a few rainy days. On the whole, however, the weather was fine and mild for the season.





[illegible]

COUNTRIES	AREA SOWN					CROP CONDITION (†)											
	1932-33	1931-32	Average 1926-27 to 1930-31	% 1932-33													
				1931-32 = 100	Aver. = 100												
						1-IV-1933			I-XII-1932			I-IV-1932					
Thousand acres								a)	b)	c)	a)	b)	c)	a)	b)	c)	
OATS.						a)	b)	c)	a)	b)	c)	a)	b)	c)			
Spain . . . . .	1,599	1,926	1,926	83.0	83.0	—	100	—	—	—	—	—	—	—	—	—	—
France . . . . .	2,156	2,205	2,105	97.8	102.4	—	—	—	75	—	—	—	—	—	—	—	—
Greece . . . . .	332	367	293	90.4	113.2	—	—	—	—	—	—	—	—	—	—	—	—
Luxemburg . . . .	69	74	73	93.3	95.0	2.2	—	—	—	—	—	—	—	—	3.0	—	—
Total Europe . . .	4,156	4,572	4,397	91.0	94.5	—	—	—	—	—	—	—	—	—	—	—	—
United States . .	*) 40,003	41,224	39,590	97.0	101.0	—	—	—	—	—	—	—	—	—	—	—	—
Syria and Lebanon	28	28	35	101.8	80.6	11) 105	—	—	—	—	—	—	102	—	—	—	—
French Morocco .	64	60	83	114.5	77.4	—	—	—	—	—	—	—	—	—	—	—	—
Tunis . . . . .	74	86	103	85.7	71.7	—	—	—	—	—	—	—	—	—	—	—	—
Total Africa . . .	138	146	186	96.6	73.7	—	—	—	—	—	—	—	—	—	—	—	—
GRAND TOTAL . . .	44,325	45,970	44,208	96.4	100.3	—	—	—	—	—	—	—	—	—	—	—	—

\*) Countries not included in the totals — a) Above the average. — b) Average. — c) Below the average. — d) Very good. — e) Good. — f) Average. — g) Bad. — h) Very bad. — m) Not including U. S. S. R. — n) Including U. S. S. R. — t) See explanation according to the various systems, page 221. — w) Winter crop. — s) Spring crop. — x) Average 1926-27 to 1929-30. — 2) 1st January 1933 — 3) The figures for 1932-33 and 1931-32 have been calculated taking into account the results of the new agricultural survey. — 4) Average 1928-29 to 1930-31. — 5) Autumn and spring crops. — 6) Middle of the previous month. — 7) Provinces of Svealand and Gotaland. — 8) 1st November 1932. — 9) Area to be planted according to farmers' intentions. — 10) Production in 1932-33: 204,288 thousand centals (340,480 thousand bushels) against 208,477 (347,461) in 1931-32 and 201,421 (355,701) the average of the five years ending 1930-31; percentages: 98.0 and 101.4. — 11) 1st March 1933. — 12) Acreage sown for grain, allowance being made for average diversion to other uses.

The fine weather permitted field work to be carried out rapidly in the best conditions. Winter cereals looked well. An extension of the oat crop was expected.

A fair amount of fertilizers was used in the course of the month but consumption remained below normal, especially on the large holdings. Purchases of selected seeds were limited.

*Bulgaria*: Spring sowings were begun in some parts of the South. Preparations for sowings were made under good conditions.

*Spain*: The weather at the time of sowing and sprouting was very good but the winter was very rainy in some districts and the excessive humidity of the soil caused some yellowing. If the spring is favourable a crop above normal may be counted on. Oats, the only cereal with spring sowings of any importance, were sown rather late this year.

*Estonia*: Warm weather set in this year earlier than usual; in the second half of March the snow had already melted, almost a month earlier than usual. Despite night frosts the soil was already thawed and field operations could be begun.

*Irish Free State*: Cultivation for spring sowings of wheat and oats were made under favourable conditions.

*France* : Severe drought has prevailed in all areas since the beginning of the fourth week of March; on about April 10 some light showers fell locally but the crops needed general rains.

The winter wheat began to yellow on light, poor lands where, in many cases, no manure had been applied; winter oats suffered particularly from the lack of moisture. Though the crop situation has remained on the whole satisfactory, prospects have deteriorated considerably since a month ago; the appearance of the crops is less good than last year. Winter damage has been generally insignificant.

Field work and the spring sowings have benefited by the fine weather but the dryness has hindered sprouting. There is noted in some regions an extension of barley sowings, despite the crisis and the poor demand by brewers.

*Great Britain and Northern Ireland* . March was exceptionally fine and dry save for cold, wet weather in the first week in England and Wales and changeable conditions in Northern Ireland throughout the month. Autumn-sown crops benefited considerably in England and Wales, but wheat suffered somewhat from the previous wet weather and later growth was retarded by night frosts. In England and Wales wheat on light lands was generally of good colour and healthy but on heavier and flooded lands showed loss of colour, barley had stood the wet weather well and had improved in colour and vigour, while oats were generally strong and healthy. In Scotland condition of wheat was fairly good and in Northern Ireland braids were healthy.

In England and Wales early drillings of spring crops were showing well and germination has been good; elsewhere work on the land was well advanced.

*Hungary* : In the three weeks from 7 March to 1 April the weather was characterised by average temperatures and relatively low precipitation.

Winter wheat had generally a good appearance. In many places rain was needed. Frost and insect damage were only sporadic. Winter rye was developing vigorously but had also need of rain. In some districts there were slight losses from the cold weather of 20-23 March. Winter barley had tillered well.

Spring cereal sowings were in progress at the beginning of April. Germination was slow due to the rather cold weather. Sowings made in good time looked well.

*Italy* : The first ten days of March were marked by cloudy, wet weather with fairly low temperatures in the North but very mild conditions, on the contrary, in the central and southern regions. In the remainder of the month the weather was variable with some light rain, frost, storms and mist; temperatures were low.

Crop condition of winter wheat was good during the month. The early wheat sowings have been finished.

*Latvia* : Mean temperatures in March were rather above normal. The snow-cover was maintained throughout the country until about 10 March. Some days later it had already disappeared in the West and toward 20 March in other parts. Precipitation in March was almost normal.

*Lithuania* : In March the weather favoured rye and winter wheat and at the beginning of April preparations for spring sowings had not yet begun.

*Luxemburg* : Spring sowings were carried out under good conditions.

*Poland* : According to the reports of 5,543 agricultural correspondents, the crop condition of winter cereals on March 15 was above the average. In comparison with the estimate for November 1932, crop condition has deteriorated somewhat though the

germination of winter wheat may be considered to be normal and satisfactory. This is, in the first place, due to the favourable autumn weather and the relatively mild winter.

The snow cover was sufficient during the frosty period and no serious damage to winter cereals was reported. Isolated cases of rotting in low-lying fields were noted only in the departments of Warsaw and Bialystok.

Between March 10 and 15 a rise in temperature occurred throughout the country and, according to the agricultural correspondents, 70 % of the snow-cover disappeared. Soil moisture may be considered sufficient as 64 % of the reports indicate that the melting of the snow provided the fields with adequate moisture

*Portugal* : The crop condition of wheat at the beginning of April was good and excellent in the important cereal producing centres but less promising on low-lying lands having excessive moisture. Production is expected, on the whole, to be smaller than in 1932, especially as the area sown is smaller

The oat crop has been attacked by rust ; the area under this crop shows an increase. The appearance of the barley and rye crops is good.

*Rumania* : In the first half of March temperatures rose appreciably and the snow melted almost completely in all the districts of the plain. In the middle of March sowings of autumn cereals looked well. No frost damage was reported. Soil moisture was sufficient

Towards the end of the month temperatures fell and snow was also reported. It was not thought that the change in the weather would appreciably affect the satisfactory condition of winter crops. Spring sowings were interrupted for a few days by bad weather.

*Switzerland* : Due to the relatively favourable winter with, in most places, a thin snow cover, the cereal sowings have in general wintered well.

The braids, though not very vigorous, are fairly regular. Strong north winds, night frosts and drought have checked growth. Work preparatory to the spring sowings has begun early and under good conditions. Sowing of spring cereals had been nearly finished at the beginning of April but germination was somewhat late due to the dry weather.

The crop condition of spelt and mixed grain crops on 1 April 1933 was, by the Institute's system, 98 against 92 at the same period of last year.

*Yugoslavia* : In the first ten days of April the weather was variable but on the whole rather warm. The rains in the second ten days gave place to snow in the remainder of the month. Temperature fell appreciably towards the end of the month. Winter cereals have a good appearance. Preparations for spring sowings began early in the month and were made under good conditions ; sowing had not begun.

*U. S. S. R.* : Field work has begun about ten days earlier than last year. At the beginning of April the spring cereal sowings were already in progress in southern and central regions and on April 15 the area sown to spring crops was 25,603,000 acres, representing about 10.9 % of that planned, against 8,297,000 acres in 1932, 4,497,000 in 1931 and 37,808,000 in 1930. Of the total area of 25,605,000 acres sown as on April 15 this year, the collective farms have sown 21,180,000 representing 12.8 % of the plan whereas the individual farms have sown only 1,544,000 acres, representing 3.4 %. Sowing conditions are favourable.

Crop condition of winter cereals at the beginning of the current month was satisfactory.

According to the data of the People's Commissariat for Agriculture, the quantity of seed assured for the spring sowings as on April 15 represented 95 % of the plan for the collective farms, 88.9 % for the State farms and 41.6 % for the individual farms.

*Canada*: In the following table are given the respective portions of each of certain crops produced in 1932 which are merchantable compared with the corresponding figures for 1931:

1932	Total production		Production of merchantable quality		% Merchantable
	ooo centals	ooo Amer. bushels	ooo centals	ooo Amer. bushels	
Wheat . . . . .	257,108	428,514	255,844	426,406	99.5
Rye . . . . .	5,005	8,938	4,980	8,893	99.5
Barley . . . . .	38,771	80,773	38,420	80,042	99.1
Oats . . . . .	133,131	416,034	130,396	407,488	97.9
1931					
Wheat . . . . .	192,795	321,325	191,060	318,433	99.1
Rye . . . . .	2,980	5,322	2,952	5,272	99.1
Barley . . . . .	32,344	67,383	32,008	66,684	99.0
Oats . . . . .	111,615	348,795	108,880	340,249	97.5

*United States*: In the week ended on March 29 the winter wheat crop showed no improvement. In the Ohio valley condition was still poor to good and cold weather hindered growth; in the eastern part of the valley some heaving occurred. In most of the trans-Mississippi area condition was fair to good but in Oklahoma it was only poor to fair. In Kansas the weather favoured growth but in others little progress was made. In Colorado the weather was dry and strong winds and drifting caused further damage. Condition was satisfactory in most of the North-West. Work on the land for the spring wheat crop was backward and the wet weather was unfavourable. In the following week ended on April 5 the weather was generally favourable to the winter wheat crop though moisture was excessive locally in some areas and rain was needed in west-central districts. Moisture was excessive in most of the spring wheat belt except in South Dakota where planting was favoured. In the week ended on April 12 the weather was warm, favouring work in areas which had been too wet, though sowings were in delay in a great part of the country.

According to a telegram of April 11 received from the United States Department of Agriculture, abandonment of the area sown to winter wheat this season (39,902,000 acres) is expected to be about 30 %, leaving an area to be harvested of about 27,930,000 acres compared with 33,656,000 actually harvested in 1932. Adding this figure for the area of winter wheat to the intended area of spring wheat (20,986,000 acres), a very preliminary total is obtained of 48,916,000 acres of wheat for harvest in 1933 compared with 55,177,000 and 55,344,000 acres respectively harvested in 1932 and 1931.

The preliminary estimate of production of winter wheat based on crop condition on April 1 (59.4 % of the normal compared with 75.8 % on April 1, 1932) and the relation between condition and yield in previous years, is 200,452,000 centals (334,087,000 bushels) compared with 277,291,000 (462,151,000) obtained in 1932 and 352,255,000 (587,091,000), the average for the period 1927-1931; percentages: 72.3 and 56.9.

In a telegram of April 19 the Department of Agriculture states that the spring season is generally 10 days to two weeks late.

*India* : In the Punjab light rains fell in many districts in the first three weeks of March. In the week ended on the 27th beneficial rain fell in all districts and condition was generally average to good on irrigated lands and below average to average elsewhere. In the following week to April 3, the weather was dry and condition remained unchanged. Some wheat crops were damaged by smut in the district of Hoshiarpur and rain with hail damaged barley in Hissar. According to the third report, the area of wheat in the Punjab is 9,548,000 acres compared with 10,887,000 in 1931-32 and 10,796,000, the average for the preceding five seasons; percentages: 87.7 and 88.4; the first estimate of production is 65,968,000 centals (109,947,000 bushels) against 75,130,000 (125,216,000) in 1931-32 and the five-year average of 76,532,000 (127,553,000); percentages: 87.8 and 86.2. In the United Provinces light rain fell in the two weeks ended on March 25; in the last week of the month light showers fell in some districts but there was no rain in others; crops were damaged by hail in the districts of Aligarh and Etah. Irrigated crops were doing well. In the Central Provinces the weather in the first weeks of March was unsettled and light to heavy showers damaged crops in many districts but late-sown crops benefited. In most of the remainder of the month the weather was clear and warm with occasional clouds and light showers. Damage by rust and caterpillars to late-sown wheat was reported from Gubbulpore and Mandla.

According to a report dated March 23 for the whole of India received from the Department of Commercial Intelligence and Statistics, the wheat crop is reported to have been adversely affected by insufficient rain, cold, frost and hailstorms, but its current condition and prospects appeared to be fairly good on the whole.

*Japan* : Due to unfavourable weather condition of wheat and barley on 1 April was bad.

*Palestine* : Climatic conditions gave rise to much anxiety until the middle of March, when well distributed, penetrating rain fell in most parts of the country. Further showers and cool weather in the first days of April have brightened the outlook considerably. Rainfall has been far below the average, but the distribution has been good. In many areas the crops are exceptionally late. The wheat outlook is only fair and total yields for the country will be below the average. Barley yield is expected to be 60 to 70 per cent. of an average crop.

*Syria and Lebanon* : In Syria crops were compromised by the scarcity of the rains. In Lebanon also, drought caused damage estimated at 10% of the crop. On the other hand, in the government of Latakia weather seemed to have been so far favourable. In Jebel Druze lack of rain continued.

*Algeria* : The month of March was marked by frequent heavy showers which were more or less well distributed; they have completed the reserves of soil moisture in certain regions of the interior where they were still insufficient but in other areas, especially in the eastern coastal plains, the soil is a little too wet; the excess of moisture has, in places, led to yellowing of the sowings with some danger of rust on low-lying lands. Towards the middle of the month, strong persistent winds also caused some slight damage by laying cereals.

The crops did not, in general, make great progress during the month because of the cloudy, wet weather but this check to growth seems rather favourable owing to the pre-

viously excessive growth which rendered the crops more open to damage by late frosts or early scirocco. The crop situation is, on the whole, very satisfactory. The late sowings have braided well.

It should be noted that less preparatory work was done on the fallows during last spring than in the previous year in the departments of Algiers and Constantine ; summer work was rather more extensive than in the preceding year but the total area on which preparatory work was done was nevertheless smaller than last season.

Despite the rains, which have checked field work and the anxiety caused by the situation on the cereal market, the work of preparing fallows will be effected normally this year.

*Egypt* : Early-sown wheat areas in Upper Egypt are beginning to mature. Grains are forming in early-sown areas in Middle and Lower Egypt. The average yield is expected to be equal to the average of the last ten years, but lower than that of the last five years. Harvesting of the early-sown barley areas is in progress in Upper Egypt and Fayum province. In other localities, early-sown areas are maturing. The average yield is expected to be normal.

*French Morocco* : Although a little late in growth, the cereal crops have a good appearance. Soil moisture is sufficient. In some regions sowings appear to cover a larger acreage than last year.

*Tunis* : The weather conditions in March were, on the whole good ; rainfall was satisfactory nearly everywhere so that even in the centre and South, where the uninterrupted drought had checked growth, crop condition improved ; while condition on March 1 was average, mediocre or bad according to district, it was on April 1 average or mediocre.

Although the condition of wheat remains at 100 as for last month, that of barley has passed from 60 to 100 and that of oats from 100 to 125 ; on April 1, 1932 condition was 120 for all three cereals ; according to the system of the country, a condition represented by 100 signifies "average" and 125, "good".

## MAIZE

During the period in which the maize harvest is in progress in Argentina, the South African crop is approaching maturity and the farmers of the northern hemisphere are proceeding with the new sowings it seems opportune to furnish a general review of production results during the past agricultural season.

Although nearly six months have already passed since the maize harvest in the northern hemisphere, various countries have not yet published their figures of production. Thus, to mention only the large producing countries of the world, the 1932 crops of the U. S. S. R. (the maize production of which represented, on the average for 1928-30, 2.7 % of the total for the world), India (relative importance in 1928-30 : 2.1 %), Manchuria (1.5 %) and Indochina. In the southern hemisphere, the figure of the Brazilian crop harvested in April-June 1932 is not known and no estimate of the current crop is possessed. On the basis of the data for the 26 countries considered in the following table, the production of which in 1931 (1931-32) represented over 86 % of the world production (excluding the U. S. S. R.), however, a sufficiently accurate idea may be obtained of world crop results in 1932 (1932-33).

In the United States, which is the largest maize producer in the world, production in 1932 exceeded that of 1931 by 13.3 % and the average of 1926-30 by 13.0 %. This is due as much to the increase in area (2.3 % on 1931 and 8.3 % on the average) as to the higher yield: 15.1 centals (26.9 bushels) per acre in 1932 against 13.7 (24.4) in 1931 and 14.5 (25.8) on the average for the period 1926-30.

### Maize.

COUNTRIES	AREA					PRODUCTION							
	1932	1931	Average 1926 to 1930	% 1932 — 1931/33		1932	1931	Average 1926 to 1930	1932	1931	Average 1926 to 1930	% 1932 — 1931/33	
	—	—	—	—		—	—	—	—	—	—	—	
	1932/33	1931/32	1926/27 to 1930/31	1931/32	Average	1932/33	1931/32	1926/27 to 1930/31	1932/33	1931/32	1926/27 to 1930/31	1931/32	Average
	1,000 acres			= 100	= 100	1,000 centals			1,000 bushels of 56 lbs			= 100	= 100
Austria .	148	152	145	97.2	102.4	2,690	2,794	2,508	4,803	4,990	4,479	96.3	107.2
Bulgaria .	1,829	1,682	1,693	108.8	108.0	23,246	19,594	15,239	41,511	34,989	27,212	118.6	152.5
Spain . .	1,102	1,053	1,044	104.7	105.6	15,280	14,778	13,215	27,266	26,389	23,598	103.4	115.6
France . .	813	855	843	95.0	96.5	10,037	13,789	9,695	17,924	24,623	17,312	72.8	103.5
Greece . .	587	618	513	95.0	114.5	4,127	3,499	3,597	7,370	6,248	6,423	118.0	114.7
Hungary .	2,905	2,720	2,652	106.8	109.6	53,617	33,459	35,897	95,746	59,749	64,102	160.2	149.4
Italy 1) 2)	3,259	3,206	3,515	101.7	92.7	61,906	40,354	52,449	110,546	72,061	93,659	153.4	118.0
Poland . .	322	244	225	132.2	143.1	4,569	2,553	2,167	8,159	4,559	3,870	179.0	210.8
Portugal .	240	243	222	98.7	108.2	...	2,296	1,968	...	4,099	3,515	...	...
Rumania .	...	939	861	...	...	8,947	9,824	8,217	15,976	17,543	14,673	91.1	108.9
Switzerland.	11,803	11,749	10,851	100.5	108.8	132,123	133,674	101,569	235,934	238,704	181,374	98.8	130.1
Czechoslov.	2	3	3	97.1	75.9	60	64	77	106	114	138	93.1	77.1
Yugoslavia .	331	344	347	96.2	95.6	6,819	5,020	5,272	12,176	8,965	9,415	135.8	129.3
U. S. S. R. .	6,442	6,168	5,734	104.4	112.4	99,646	70,623	65,918	177,940	126,113	117,711	141.1	151.2
Canada . .	9,084	9,741	8,483	93.3	107.1	...	...	69,622	...	...	124,325	...	...
United Stat.	130	132	159	98.7	81.9	2,832	3,051	3,172	5,057	5,449	5,665	92.8	89.3
Mexico . .	107,729	105,301	99,456	102.3	108.3	1,628,505	1,437,691	1,441,278	2,908,045	2,567,306	2,573,710	113.3	113.0
Syria a. Leb.	7,945	8,346	7,692	95.2	103.3	42,816	47,150	40,990	76,458	84,196	73,196	90.8	104.5
Turkey . .	44	65	120	68.0	37.0	403	730	1,352	719	1,303	2,415	55.2	29.8
Algeria . .	830	903	772	91.9	107.5	8,267	11,423	8,678	14,762	20,398	15,497	72.4	95.3
Egypt . .	16	24	24	69.7	68.6	101	133	144	181	238	257	76.2	70.4
Eritrea . .	2,043	2,194	2,066	93.1	98.9	42,593	43,793	42,604	76,060	78,202	76,079	97.3	100.0
Kenya 3)	7	22	16	33.3	47.6	66	240	97	118	429	174	27.5	67.9
Fr Morocco	166	161	199	103.7	83.7	2,766	1,525	2,804	4,940	2,724	5,008	181.4	98.6
It. Somalil.	856	864	588	94.1	145.8	2,619	3,003	3,213	4,677	5,363	5,737	87.2	81.5
Tunis 4)	24	53	39	45.1	61.0	213	521	417	380	931	745	40.8	51.0
Argentina a)	44	45	41	99.0	108.2	121	110	109	217	197	194	110.0	111.3
Un. of South Africa .	*14,540	*14,468	*12,180	100.5	119.4	...	...	...	...	...	...	...	...
TOTALS . .	9,301	9,431	9,713	98.6	95.8	147,710	159,505	176,194	263,769	284,831	314,634	92.6	83.8
TOTALS . .	3)6,022	3)6,026	3)5,413	99.9	111.2	22,768	38,068	37,811	40,657	67,979	67,520	59.8	60.2
TOTALS . .	166,097	163,301	154,717	101.4	107.1	2,324,844	2,006,958	2,074,678	4,151,519	3,744,578	3,704,792	110.9	112.1

\* Countries and figures not included in the totals. — 1) Including the totals account has been taken of the probable area cultivated in some countries for which estimates of production but not those of area are available. — a) Area sown. — b) Area harvested. — c) Spring crop (maggengo). — d) Summer crop (cinquantino). — e) The figures for 1931 and 1932 have been calculated taking into account the results of the new agricultural survey. — 2) Average 1927-30. — 3) European crop. — 4) Maize and sorghum.

The four Danubian maize exporting countries, Rumania, Yugoslavia, Hungary and Bulgaria in 1932 increased their maize area by 3.0 % compared with 1931 and by 9.8 % compared with the average.



As in 1932 the yield per acre was also relatively high (especially in Hungary and Yugoslavia), amounting to 13.5 centals (24.1 bushels) per acre against 11.5 (20.6) in 1931 and 10.4 (18.6) on the average for 1926-30; these four countries have obtained a production of 309 million centals (551 million bushels) against 257 (460) million in 1931 and 219 (390) million on the average (119.9 % and 141.2 %).

Besides the four Danubian countries there are in Europe 9 other maize producing countries (excluding the U. S. S. R.), of which the most important is Italy. These are: Italy: France, Spain, Czechoslovakia, Greece, Austria, Switzerland, Poland and Portugal. The production of Poland is not yet known and for Portugal the maize area of 1932 is lacking. These countries, non-contiguous geographically, have the common characteristic of being not only producers but also importers of maize. Grouping the first seven countries together, their total maize area in 1932 was 6.6 million acres against 6.5 in 1931 and 6.6 on the average for 1926-30 (101.4 % and 99.1 %). On this basis it may be said that these countries do not show a tendency to extend maize cultivation. Thanks to an exceptionally high yield per acre (1), the group of seven countries mentioned above has obtained a production of 105 million centals (188 million bushels) against 83 (148) million in 1931 and 89 (150) million on the average for 1926-30 (127.3 % and 118.6 %). Calculating the average consumption of these seven countries at 139 (248) million it may be forecast that their imports will not exceed 33 (59) million.

The other important countries of the northern hemisphere, such as Canada, Mexico, Turkey and Egypt record crops smaller than in the preceding year and smaller or equal to the average (except for Mexico, the production of which in 1932 was 4.5 % above the average).

From the points of view of both volume of production and world trade, the production of Argentina (the second largest producing country and the largest exporting country of the world), deserves special attention. The first estimate of production this year amounts to 148 million centals (264 million bushels) remaining therefore, 7.4 % smaller than that of last year and 16.2 % below the average. The relatively low level of production was due both to the smaller area harvested and to the lower yield per acre. It should be noted that the area sown is decidedly larger than that of last year and the average.

In order to furnish a basis for the correct appreciation of all factors influencing the Argentine production, the data of the last seven seasons are given below in detail.

In interpreting these figures, it should be remembered a) that for 1932-33 the figure of production is a first estimate, subject to rectification; b) that the average of production is influenced by the exceptionally large production of 1930-31.

The other important producing and exporting country of the southern hemisphere, the Union of South Africa, reports an exceptionally small crop due to

(1) For example Italy has recorded a yield per acre for 18.6 centals (33.1 bushels) per acre against 12.4 (22.1) in 1931 and 14.6 (26.1) on the average for the period 1926-30

drought during the growing period. According to the first estimate, the production of this country should amount to only 22.8 million centals (40.7 million bushels) representing only 59.8 % of last year's crop and 60.2 % of the average. In this case also, it should be borne in mind that the forecast is a preliminary one of a crop which is harvested in May-July.

PRODUCTION OF MAIZE IN ARGENTINA.

SEASON 1)	AREA			PRODUCTION			
	Sown	Harvested	% Area sown = 100	TOTAL		Per acre of area harvested	
	(000 acres)	(000 acres)	%	(000 centals)	(000 bushels)	(centals)	(bushels)
1932-33 . . . . .	14,540	9,301	64.0	147,710	263,769	15.9	28.4
1931-32 . . . . .	14,468	9,431	65.2	159,505	284,831	16.9	30.2
Average 1926-27-1930-31 . . . . .	12,180	9,713	79.7	176,194	314,634	18.1	32.4
1930-31 . . . . .	13,776	11,577	84.0	235,014	419,068	20.3	36.3
1929-30 . . . . .	13,954	10,428	74.7	157,146	280,619	15.1	26.9
1928-29 . . . . .	11,832	8,693	73.5	134,639	240,427	15.5	27
1927-28 . . . . .	10,739	8,802	82.0	174,496	311,602	19.8	35.4
1926-27 . . . . .	10,599	9,061	85.5	179,677	320,853	19.8	35.4

1) Harvesting takes place in the second year indicated (March-April).

It may, on the whole, be said that production in 1932 (1932-33), despite the decrease in the crops of Argentina and the Union of South Africa, will be decidedly larger than that of 1931 (1931-32) and the average of the preceding quinquennium. The differences (positive and negative), between the production of 1932 (1932-33) and that of last year and the average, in the principal countries considered above, where fluctuations are normally largest, are as follows :—

	Surplus of production in 1932 (1932/33) over that of 1931 (1931/32)		Surplus of production in 1932 (1932/33) over the average of 1926/30 (1926/27-1930/31)	
	million centals	million bushels	million centals	million bushels
United States . . . . .	+ 190.9	+ 340.9	+ 187.4	+ 334.6
4 Danubian countries . . . . .	+ 51.4	+ 91.7	+ 89.9	+ 160.6
7 European importing countries . . . . .	+ 22.5	+ 40.2	+ 16.3	+ 29.1
Argentina . . . . .	— 11.7	— 20.9	— 28.4	— 50.8
Union of South Africa . . . . .	— 15.4	— 27.6	— 15.2	— 27.2
Total . . . . .	+ 237.7	+ 424.3	+ 250.0	+ 446.3

To the increase in production indicated above there corresponds a much more moderate increase in the quantity which will presumably be exported. In fact, in the United States almost the whole of the crop is normally consumed in the

country itself and a larger production does not necessarily lead to an increase in exports. In the twelve months following the crop of 1925, which, with 1,634 million centals (2,917 million bushels) reached the highest for eight years previously, exports were, for example, only 13 million centals (24 million bushels) whereas, with a production of 1,579 million centals (2,819 million bushels) in 1928, exports amounted to 22 (39) million. Price movements have, in the United States, a greater influence on exports than the quantity of crop production. As regards the Danubian production, moreover, it should be borne in mind that the poor crops of bread cereals obtained in 1932 will bring about a considerable local increase in the human consumption of maize so that the probable increase in exports during the season 1932-33 will be considerably smaller than might be expected in view of the increase in production.

V. DE.

*France* : The weather has favoured work preparatory to the maize sowings in the West and South-West.

*Hungary* : Up to the end of April, due to cold weather, sowings had not begun.

*Italy* : Preparatory work is proceeding actively

*Argentina* : The losses caused by the invasion of locusts and adverse weather have been very considerable this year, the area of crops destroyed being estimated at 5,239,000 acres. The yield of 15.9 centals per acre (28.4 bushels per acre) is nearly normal.

*United States* : In the week ended on April 5 maize planting was delayed by wet fields but in the following week the weather was more favourable and progress was made.

*Java and Madura* : Area harvested in January 1933 was 777,000 acres against 1,003,000 acres at the same date last year and 636,000 on the average for January in the period 1923-32. In almost all districts unit-yields were satisfactory. Condition of the crop to be harvested later was generally average to good.

*Tunis* : Preparatory work and the first sowings have been effected under good conditions.

*French West Africa* : In Senegal, maize cultivation, which was considerably extended last season, has yielded good results. In Dalmey, on the contrary, which is by far the largest producer, the prolonged drought has greatly reduced production, which is reported to be poor, especially in the South.

*Union of South Africa* : The crop reached a critical stage of growth in February and correspondents experienced considerable difficulty in arriving at a reliable estimate. The drought in January and the greater part of February caused considerable irreparable damage, especially to the early-planted crop; the late-planted crop is more promising. Throughout February the rainfall was generally insufficient and in many inland areas was the lowest for that month for over twenty years.

## RICE

*Italy* : Preparatory work was effected under normal conditions during March.

*Formosa* : Condition of first crop rice on 1 April was fairly good. In some parts slight damage is reported from insect pests.

*India* : In Bengal the weather was dry in the first three weeks of March. In the following two weeks to 5 April light showers fell in places but more rain was badly needed for July padi and to facilitate field operations.

*Java and Madura* : In January harvesting had been completed on the following areas (acres) :

	January 1933	January 1932	Average Jan. 1923 to Jan. 1932
Irrigated padi . . . . .	150,000	167,000	127,000
Unirrigated padi . . . . .	41,000	23,000	18,000

Unit-yield on the *sawahs*, which is checked accurately for tax purposes, was 35.09 bushels per acre in January 1933 against 36.18 in January 1932 and 36.34 in January 1931.

Owing to the lack of irrigation water the area newly planted is smaller than usual; besides these plantings the total areas under rice at the end of January are also given (in acres) :

	1933	1932	1923-32
New plantings :			
Rice on <i>sawahs</i> . . . . .	2,202,000	2,517,000	2,396,000
Gogo rice . . . . .	40,000	65,000	111,000
Total area :			
Rice on <i>sawahs</i> . . . . .	4,134,000	4,377,000	4,096,000
Gogo rice . . . . .	992,000	1,007,000	966,000

*British Malaya* : February was generally very dry throughout the country, the recorded rainfall being in most cases below the average. In most districts harvesting was largely completed; preliminary reports show that the crop is generally well above average except where late planting is practised, the dry weather having in such areas commenced too soon so that the crops will there be below average.

A notable increase of 5 million pounds of padi is reported from the Temerloh District; this should allow a large surplus for export to other parts of the country if the difficulty of cost of transport can be overcome. Trials in Selangor to produce two crops of padi in one year have given results much better than those obtained with one crop.

## POTATOES

*Belgium* : Planting of early potatoes has begun; a smaller crop is expected. Renewal of the plants is less general than in previous years.

*France* : The weather has favoured preparatory work and planting in the West and Southwest. Stocks in the hands of producers are still abundant.

*Hungary* : At the beginning of April planting of early varieties had already been terminated in many districts. At the same date preparation of the land for late varieties had been begun.

*Italy* : Planting of potatoes was nearly completed in the latter half of March.

*Palestine* : Lifting of the potato crop is in progress in the coastal area. Yields are below the average.

## SUGAR

The information published in the Institute's Crop Report for March concerning the first forecasts of the areas to be sown to sugar-beet in Europe in 1933 has since been largely confirmed; on the basis of recent information and of the data communicated by the Governments or Sugar Manufacturers' Associations the following table, complete for Europe, has been compiled. As regards the extra-European countries, data are available only for Japan and Turkey. According to these preliminary figures increases in the respective beet areas compared with last year are noted in Germany, Austria, Denmark, Finland, Great Britain, Hungary, Latvia, the Netherlands, Rumania, Sweden and Switzerland.

Decreases have taken place, on the contrary, in Bulgaria, Spain, Italy, Lithuania, Poland and Yugoslavia. The beet areas of Belgium, the Irish Free State, France and Czechoslovakia remain about equal to those of 1932.

Besides the information received by the Institute last month, and published in the March Report the following news has been received during April :

The Ministry of Agriculture of Rumania communicates that the area to be sown to sugar-beet this year will be increased by 80 %-100 % compared with that of the preceding year.

The Ministry of Agriculture of Belgium states that the forecasts of the beet area for 1933-34 vary too much to permit an exact judgement but the official opinion is that there will not be much difference in the area compared with that of 1932.

The Department of Agriculture of the Irish Free State has communicated, on the basis of information received from the Irish Sugar Manufacturing Company, Carlow, the area which producers have contracted with the factories to plant.

The Ministry of Agriculture, Industry and Commerce of Spain communicated, at the end of March that, although sowing had already begun in some regions, contract negotiations between the producers and the factories had not yet been concluded and that consequently the area to be sown could not yet be approximately estimated ; it was considered, however, that the area would be about the same as that of last year.

It is known that in Spain, the factories hold large stocks and are pressing producers to restrict sowings but the latter are not willing to make a reduction as they have already prepared the land for sowing. Owing to this situation, it is considered that the area this year will be a little smaller than that of 1932.

As regards the U. S. S. R., the area indicated in the table is about 5 % smaller than that harvested last year; compared with the area sown in 1932, the reduction is, as was indicated in last month's Crop Report, very much larger, namely, 25 %; since abandonment of area sown was abnormally large last year and probably will not be repeated this year, the area harvested has been taken as providing a better basis of comparison.

*Acreage of sugar beet.*

COUNTRIES	1933 *)	1932	Average 1927 to 1931	% 1933	
				1932 = 100	Average = 100
				ACRES	
Germany . . . . .	699,000	538,759	1,014,242	130	69
Austria . . . . .	109,000	105,500	80,693	103	135
Belgium . . . . .	133,000	132,109	148,720	101	90
Bulgaria . . . . .	26,900	40,237	45,097	67	60
Denmark . . . . .	100,000	93,400	90,842	106	109
Spain . . . . .	200,000	201,488	185,230	98	107
Irish Free State . . . . .	13,600	13,686	13,351	99	102
Finland . . . . .	6,700	5,869	5,283	114	126
France . . . . .	620,000	617,200	644,485	100	96
Great Britain . . . . .	320,000	255,464	244,917	126	131
Hungary . . . . .	112,400	105,058	167,468	107	67
Italy . . . . .	196,000	207,334	267,555	95	73
Latvia . . . . .	32,000	21,323	7,191	151	45
Lithuania . . . . .	8,900	13,141	6,978	68	127
Netherlands . . . . .	119,000	98,999	141,020	120	84
Poland . . . . .	250,000	286,200	498,624	86	50
Rumania . . . . .	86,000	45,420	126,905	190	68
Sweden . . . . .	119,000	100,720	90,593	118	131
Switzerland . . . . .	4,000	3,500	3,390	114	117
Czechoslovakia . . . . .	361,000	360,001	593,062	100	61
Yugoslavia . . . . .	54,000	81,887	124,182	66	44
Total Europe a) . . . .	3,570,500	3,327,295	4,499,828	107	79
U. S. S. R. . . . .	3,000,000	3) 3,123,000	2,282,002	95	130
Total Europe b) . . . .	6,570,500	6,450,295	6,781,830	101	96
Canada . . . . .	...	45,000	48,273	...	...
United States . . . . .	...	768,000	708,217	...	...
Total North America . . . .	—	—	—	—	—
Japan . . . . .	22,151	24,076	23,567	92	94
Turkey . . . . .	55,708	37,383	21,642	149	257
Total Asia . . . .	77,859	61,459	45,209	127	172
GENERAL TOTALS . . . { a)	—	—	—	—	—
b)	—	—	—	—	—

\*) Approximate data. — a) Not including U. S. S. R. — b) Including U. S. S. R. — 1) Average 1929 to 1931.  
2) Year 1931. — 3) Harvested area: sown area was 4,038,000 acres.

For all of the other countries no important modification need be made of the statements contained in last month's Crop Report.

For Europe as a whole, excluding the U. S. S. R., on the basis of the preliminary estimates, the area to be sown to sugar-beet in 1933 is 7 % larger than the beet area of 1932 and 21 % below the average of the preceding quinquennium. The largest contributions to the increase on last year are made by Germany, Great Britain and Rumania.

Adding the data of the U. S. S. R. to those of the other European countries, this year's beet area is a little larger than that of 1932 and 4 % below the average of the quinquennium 1927-1931.

E. R.

*France* : Preparatory work and sowing, which commenced at the beginning of April, have benefited by the favourable weather but there is a risk that if the drought persists, it may compromise germination.

*Production of Cane-sugar.*

COUNTRIES	1932-33 (1)	1931-32	Average 1926-27 to 1930-31	1932-33 (1)	1931-32	Average 1926-27 to 1930-31	Percentages for 1932-33	
							1931-32 = 100	Average = 100
	Thousand centals			Short tons			%	
AMERICA.								
Argentina . . . . .	7,665	7,623	8,758	383,253	381,120	437,919	101	87
Brazil . . . . .	21,385	21,826	19,586	1,070,000	1,090,000	979,281	98	109
Cuba . . . . .	44,093	58,270	96,318	2,000,000	2,913,441	4,815,835	76	46
Ecuador . . . . .	265	504	442	13,000	25,000	22,084	52	60
United States (L.) . .	4,019	3,139	2,536	200,900	157,000	126,798	128	158
Guadeloupe . . . . .	551	507	519	28,000	25,000	25,949	109	106
British Guiana . . . .	3,024	3,329	2,696	151,200	166,469	134,774	91	112
Jamaica . . . . .	1,344	1,310	1,304	67,000	65,500	65,181	103	103
Mexico . . . . .	4,718	5,161	4,433	236,000	258,000	221,655	91	106
Paraguav . . . . .	154	185	118	7,700	9,260	5,920	83	130
Peru . . . . .	8,819	8,868	8,690	400,000	443,400	434,506	99	101
Puerto Rico . . . . .	16,326	19,849	14,439	816,295	992,423	721,935	82	113
Dominican Republic . .	9,414	9,579	7,749	471,000	478,931	387,455	98	121
Total America . . . .	121,777	140,150	167,588	5,844,348	7,005,544	8,379,292	87	73
ASIA.								
Formosa . . . . .	15,452	21,805	14,940	772,586	1,090,249	746,981	71	103
India . . . . .	92,991	86,913	67,769	4,650,000	4,345,600	3,388,414	107	137
Japan . . . . .	1,764	2,072	1,932	88,000	103,586	96,620	85	191
Java . . . . .	29,322	57,320	59,818	1,466,000	2,900,000	2,990,857	51	149
Philippine Is. . . . .	23,590	20,944	17,906	1,180,000	1,050,000	895,282	113	132
Total Asia . . . . .	163,119	189,054	162,365	8,156,586	9,489,435	8,118,154	86	100
AFRICA.								
Egypt . . . . .	3,307	3,249	2,209	165,000	162,472	110,463	102	150
Mauritius . . . . .	5,412	3,616	4,952	271,000	180,790	247,577	150	109
Reunion . . . . .	1,197	946	1,073	59,868	47,312	53,643	126	112
Union of South Africa	7,178	6,518	5,910	358,905	325,900	295,498	110	121
Total Africa . . . . .	17,094	14,329	14,144	854,773	716,474	707,181	119	121
OCEANIA.								
Australia . . . . .	12,119	13,148	11,365	605,900	657,400	568,236	92	107
Hawaii . . . . .	19,680	19,960	18,113	984,000	998,000	905,655	99	109
Fiji Is. . . . .	3,069	1,786	1,967	153,400	89,300	98,325	172	156
Total Oceania . . . .	34,868	34,894	31,445	1,743,300	1,744,700	1,572,216	100	111
GENERAL TOTALS . . .	336,858	378,427	375,542	16,599,007	18,956,153	19,776,843	89	90

1) Approximate data.

*Hungary* : At the beginning of April sowings were almost completed.

*Italy* : The sowings were nearly completed in the latter half of March.

*U. S. S. R.* : According to the Government plan, the area to be sown this year is smaller than that of last year and the Governments measure's for beet growing aim principally at an increase in yields per acre. In the current year this production is forecast at 4 ½ short tons per acre. At the beginning of April sowing had already begun in the North Caucasus and the Ukraine.

*Barbados* : In March grinding was general. Though the juice was at first poor an improvement was expected as maturer canes were ground.

*Trinidad* : Harvesting proceeded with little interruption in February and the early part of March. Production was expected to be larger than in 1931.

*Formosa* : Growing condition of the cane under planting since last summer and of the cane under cutting, on 1 April was fairly good

Harvesting is progressing in good conditions.

*India* : At the beginning of April planting and pressing of sugar-cane continued in Bihar and Orissa and the United Provinces. Standing sugar cane was in good condition in Bihar and Orissa

*Egypt* . Preparation of land and planting of sugar cane are in progress. Planting is over in Assuan province. Hoeing, manuring and watering of the suckers are in progress. Germination is satisfactory. Crop condition as on 1 April : 100, against 103 on 1 March and 104 on 1 April 1932. The cutting of last year's crop is over, with a production of 48,485,000 centals of cane (2,424,000 sh. tons) as against 46,903,000 (2,345,000) in 1931-1932 and a five-year average 1926-27 to 1930-31 of 37,470,000 (1,873,000). Percentages : 103.4 and 120.4.

The area planted is 72,700 acres, against 67,800 in 1931-32 and a five-year average of 54,700. Percentages : 107.3 and 132.9. Total production of unrefined cane sugar obtained up to the end of February 1933 was 1,892,000 centals (94,600 sh. tons), as against 1,783,000 (89,200) during the same period last year. The average content of sugar per 100 units of cane worked up to the same date, was 11.89 against 11.73 last year. At the end of March these figures were respectively as follows : 2,998,000 (149,900) as against 2,753,000 (137,600) and 12.32 % as against 11.89 % last year.

*Union of South Africa* : Crop condition in February was 10 % below normal. Rainfall in Zululand was 76-102 mm. (3-4 inches) but along the North and South Coasts of Natal only 51 mm. (2 inches). The weather generally was hot and dry.

## VINES

The crop condition of vines in the northern hemisphere was satisfactory at the middle of April. Lignification seems, on the whole, to have taken place under good conditions ; no serious winter adversities occurred even in the countries generally subject to winter frosts. Work in the vineyards was effected



under normal conditions although sometimes hindered by the hardness of the soil due to prolonged drought such as was experienced in South France, or by excessive rainfall, as in Italy. Growth is in general good, being fairly well advanced in France, though somewhat late in Italy. The buds have begun to shoot under favourable conditions in the more southern vineyards. No insect attacks, cryptogamic disease or other adversities have so far been reported.

At the middle of April prospects were therefore, on the whole, satisfactory but the vines were, in the principal viticultural regions, about to enter the critical period of frosts. The cold spell which persisted in the last ten days of April may possibly have caused some damage. There is moreover, reason to believe that preventative treatments will be somewhat neglected owing to the economic crisis with the result that attacks of cryptogamic disease would have particularly grave consequences.

The commercial situation remains completely calm. Sales are slow, but should not leave large stocks at the end of the season in France, Algeria and Spain ; in Italy the poor quality of the wines which will not have been marketed will, for the larger part, prevent their being carried over to the next season. This proportion of poor wines, moreover, weighs on the markets rather generally. Foreign trade resumed activity, though to a restricted extent, due to the partial re-opening of the French market. Prices remain fairly firm.

P. de V.

*Austria* : As a consequence of the greater interest in table grapes an increase in the vine area is reported

At the beginning of April condition of the vines was 1.9 against 2.0 on 1 March 1933 and 2.6 on 1 April 1932

*Spain* : The March weather was fairly favourable to the vines, which were generally fine in appearance at the beginning of April ; the buds began to shoot under good conditions. Field work has been affected normally. In the province of Saragossa, a severe attack of locusts is, however, giving rise to grave anxiety and it is feared that they will also invade Catalonia.

The market was fairly active during March, especially for the wines of Mançia and the good wines of Catalonia, due to the growth of exports to France ; though transactions are fairly numerous, they relate to only small quantities. At the beginning of April, activity slackened and calm reigned on most of the large wine markets.

Quotations have remained fairly firm, at least for fine wines ; holders of weak wines, who have so far resisted, are now more amenable and at the beginning of April, quotations showed a tendency to fall.

*France* . The rainy period at the beginning of March was followed, after the 20th., by a period of fine, dry weather favouring field work, which was somewhat late ; in the South, the soil, which had been settled by the rain and hardened by dry weather, renders work, however, difficult

Growth is good and more advanced than last year. Shooting of the vine buds, which began in the South at the beginning of April, is taking place under good conditions ;

in the southern vineyards it was followed by some white frosts, without appreciable consequences. No parasites have, so far appeared except for some attacks of caterpillars in the South, which appear to have been checked and have caused no serious damage.

The crop situation is on the whole good but the vines are at the commencement of the critical period of late frosts.

Anti-cryptogamic measures were begun towards April 10 in vineyards in the plains.

The commercial situation remains bad. [After a slight activity on the market towards the middle of March, an almost absolute calm was again noted. During March, trade purchases of the home product were nearly 22 million Imperial gallons (26 million American gallons) less than those of the same month of 1932; the total quantity sold by home producers during the first six months of the season is therefore 68 million Imperial gallons (82 million American gallons) smaller than the corresponding quantity of last season (361 million Imperial gallons or 433 million American gallons against 429 (515) and about equal to that of the first six months of 1930-31, when the opening stocks were, however, very low. The difference compared with last year is represented by the imports, which in the first six months passed from 147 (177) millions in 1931-32 to 216 (259) millions this year, the very large entrances of Algerian wines are the principal cause of this increase, but the imports of foreign wines have also again increased: 6,115,000 Imperial gallons (7,434,000 American gallons) in March 1933 and 24.2 (29.0) millions in the first six months against 1,117,000 (1,400,000) and 9,063,000 (10,884,000) respectively during the preceding season. Though imports from Algeria should decrease in the months to come, however, and not exceed 330 million Imperial gallons (400 million American gallons), there is on the contrary every reason to believe that foreign imports will be maintained at the present level and should result in a total of 55 (66) millions for the whole of the season. The total imports for the season would then exceed the maximum attained in 1930-31]

There remains at present about 810 (980) millions in producers' hands. Of this quantity it is anticipated that only 350 to 400 million Imperial gallons (420 to 480 million American gallons) will be sold, especially as absorption by the trade in February-March shows a considerable decrease, as the production of alcohol is greatly reduced and the high level of trade stocks indicates some congestion.

Of this quantity, about 44 (53) millions must by decree be compulsorily held; a considerable portion consists of weak wines for family consumption which, in 1931-32, exceeded 400 (480) millions.

Despite the very slow movement of the trade season and the inactivity of business and notwithstanding the very large quantities imported, it seems that supplies will be marketed normally unless there occurs an excessive reduction of trade consumption or a heavy import of foreign wines, both of which are rather improbable.

Prices, which had fallen by 5-15 % at the end of February, have remained fairly firm since the beginning of March; weak wines are very difficult to sell even at extremely low prices.

*Italy*: The month of March in which conditions were, as usual, variable had periods of fine weather and, toward the end of the month, a sharp fall in temperature which prevented vigorous growth; work in the vineyards was frequently interrupted but was, however, nearly finished at the beginning of April.

Fine, warm weather set in during the first week of the month and permitted rapid growth. Condition of the vines was satisfactory.

The market is almost completely calm with no appreciable change in prices; the relative scarcity of good wines of high degree and the decree regarding the minimum

degree of wines for sale, compelling their utilisation for the strengthening of weak wines, maintain their prices, whereas the weak wines are offered at very low prices and are generally not in demand. The movement of exports is slow, consumption still low and home trade greatly reduced.

*Algeria* — In March precipitation was plentiful. The cloudy, wet weather checked growth, which had been too advanced. The buds appeared to be strong and profuse; in vineyards other than those injured by the spring frosts of 1932, growth has been greatly injured and progress was made under good conditions. The condition of the vines was, on the whole, satisfactory at the beginning of April.

The first anti-cryptogamic treatments were applied towards the end of March about a week later than usual. Field work was interrupted partly by bad weather and partly in order not to damage the young shoots.

The trade movement slackened in February-March in normal manner. During the first six months of the season, the Algerian production furnished to the trade 255 million Imperial gallons (306 million American gallons) so that there still remains to be disposed of a quantity of about 154 (185) millions. This quantity is the same as that residual at the same period of last year; it should be reduced by nearly 22 (26) millions compulsorily held under decree and by a nearly equal quantity for distillation or consumption outside the trade. The 100 (132) millions remaining should apparently be easily marketed in France, this quantity is about equal to that sold during the last six months of the previous two seasons.

Quotations are firm

## OLIVES

*Production.* — The statistical data and information possessed by the International Institute of Agriculture permit an approximate estimate to the made of the world production of olive oil in the season 1932-33 which, according to the forecasts already made during the season, amounts to a little more than 18 million centals (230 million American gallons), of which 12,2 million centals (160,8 million American gallons) is contributed by Spain and Italy. Consequently, a period of sharp oscillations from 1926-27 to 1930-31, in which the total production of oil touched alternately maximum and minimum levels, is followed by two years of normal production; the current production thus approaches that of the preceding year and for three countries (Spain, Italy and Greece), which in 1931-32 contributed more than 80 % of the world oil production, the difference of output in the two years is only 1 %.

In Spain, conditions during the year were fairly normal: it is particularly noted that the western and central areas of the country have had a poor production but in compensation production has been abundant in eastern areas, especially in eastern Andalusia, Levante, the Balearic Islands and Aragona. In Italy, oil production, which was slightly smaller than that of 1931-32 but somewhat above the average of the preceding quinquennium, was, compared with 1931-32, particularly poor in Liguria, Calabria and insular Italy; in Tuscany, Latium, Abbruzzi and Apulia, on the contrary, yields were higher.

Greece this year had a very good oil production as regards quantity and the latter was larger than that of 1931-32 which exceeded 2 million centals (30

million American gallons). Note should also be made of the progressive increase in the production of table olives in which there exists a considerable trade with several countries.

In Tunis seasonal conditions favoured the olives and oil production is estimated to equal that of 1931-32, which was very high or was exceeded only by the exceptional production of 1929-30.

*Olives and Olive Oil Production.*

COUNTRIES	AREA					ENGLISH MEASURES			AMERICAN MEASURES			% 1932/33	
	1932/33	1931/32	Aver. 1926/27 to 1930/31	% 1932/33		1932/33	1931/32	Aver. 1926/27 to 1930/31	1932/33	1931/32	Average 1926/27 to 1930/31	1931/ 1932 = 100	Aver. = 100
				1931/ 1932 = 100	Aver. = 100								
				Thousand acres									
Spain 1) . .	4,830	4,723	4,396	102.3	109.9	(s) ... (t) 7,601	39,818 7,741	42,939 8,211	... 99,886	3,981,789 101,725	4,293,906 107,895	... 98.2	... 92.6
Greece . .	—	—	—	—	—	(s) 2) 880 (t) 2,636	2) 700 2,286	2) 611 1,811	2) 88,018 34,643	2) 69,970 30,042	2) 61,129 23,796	125.8 115.3	144.0 145.6
Italy 3) a) b)	1,992 3,176	1,993 3,174	1,437 4,273	99.9 100.1	138.6 74.3	(s) 28,672 (t) 4,634	30,873 4,979	27,293 4,216	2,867,179 60,895	3,087,256 65,420	2,729,260 55,401	92.9 93.1	105.1 109.9
Portugal . .	—	—	—	—	—	(t) 727	1,504	988	9,540	19,763	12,980	48.3	73.6
United States . .	—	—	—	—	—	s) 440	320	394	44,000	32,000	39,360	137.5	111.8
Syria and Lebanon . .	191	190	179	100.4	106.8	(s) 658 (t) 92	1,510 227	1,208 244	65,754 1,203	151,030 2,986	120,807 3,203	43.5	54.4 37.5
Algeria . .	—	—	—	—	—	(s) 3,858 (t) 384	4,700 593	3,567 457	385,810 5,042	469,996 7,794	356,708 6,006	82.1 64.7	108.2 83.9
Tunis . . .	—	—	—	—	—	(t) 1,102	1,102	820	14,485	14,485	10,777	100.0	134.4
TOTALS . .	—	—	—	—	—	(t) 17,178	18,431	16,744	225,735	242,190	220,028	93.2	102.6

a) Pure crop. — b) Mixed crop. — s) Olives. — t) Oil. — 1) Area bearing. — 2) Olives for table. — 3) The figures for 1932-33 and 1931-32 have been calculated taking into account the results of the new agricultural survey.

In Algeria production was decidedly poor partly due to the fact that the low level of prices has induced producers to abandon crops on the less productive trees.

The new season has begun under generally favourable weather conditions. Field work, pruning and tillage have progressed regularly and in some countries the buds are shooting. In some countries, for example, Portugal, the olive area is being extended by new planting.

*Commerce.* — As regards foreign trade in relation to the results of the 1931-32 oil campaign, the situation may be summarised as follows

In 1932 exports of olive oil from Spain (excluding those destined to Italy), were maintained at a fairly high level though remaining below those of the preceding two years; a large reduction took place, however, in shipments to Italy of oil for refining (in containers holding more than 44 lb.; 6 American gallons), which had greatly increased in 1931. In the following summary are given the statistics for the last three years published by the General Direction of Customs of Spain:

*Exports of olive oil from Spain*

<i>Destination :</i>	1932	1931 (Centals)	1930
Argentina . . . . .	283,194	312,654	445,415
Cuba . . . . .	127,567	114,292	152,937
Great Britain and Northern Ireland . . . . .	52,999	68,855	81,174
United States . . . . .	288,994	319,440	447,851
Other countries . . . . .	490,423	508,822	829,038
<i>Total . . .</i>	<i>1,240,177</i>	<i>1,324,063</i>	<i>1,956,415</i>
Italy . . . . .	138,894	745,172	400,394
<i>General total . . .</i>	<i>1,388,071</i>	<i>2,069,235</i>	<i>2,356,809</i>

<i>Destination :</i>	1932	1931 (American galls.)	1930
Argentina . . . . .	3,721,320	4,108,447	5,852,995
Cuba . . . . .	1,676,295	1,501,866	2,009,682
Great Britain and Northern Ireland . . . . .	696,440	904,793	1,066,678
United States . . . . .	3,797,540	4,197,617	5,885,007
Other countries . . . . .	6,523,275	6,686,203	10,894,017
<i>Total . . .</i>	<i>16,414,870</i>	<i>17,398,926</i>	<i>25,708,379</i>
Italy . . . . .	1,825,143	9,791,967	5,261,397
<i>General total . . .</i>	<i>18,240,013</i>	<i>27,190,893</i>	<i>30,969,776</i>

Mention should be made of the large decrease in purchases of oil from Spain by the United States and Argentina, which are markets of great importance. A large increase has taken place in exports from Greece having Italy as the principal destination ; because the Greek oil has in general a high degree of acidity, it is purchased by the foreign refineries and in the latter half of 1932 such purchases in Italy partly replaced those from Spain owing to the abandonment of the gold standard by Greece early in 1932 and to the subsequent fall in the dracma and the sharp rise in prices which facilitated the sale of stocks.

*Exports of olive oil from Greece.*

<i>Destination :</i>	1932	1931 (Centals)	1930
Italy . . . . .	455,126	101,098	115,977
Other countries . . . . .	158,370	60,779	42,940
<i>Total . . .</i>	<i>613,496</i>	<i>161,877</i>	<i>158,917</i>
		(American gallons)	
Italy . . . . .	5,980,608	1,328,480	1,523,999
Other countries . . . . .	2,081,064	798,676	564,250
<i>Total . . .</i>	<i>8,061,672</i>	<i>2,127,156</i>	<i>2,088,249</i>

The exports from Italy, which consist, for the larger part, of oil re-exported after having been refined in the country, in 1932 showed a considerable decrease, as may be seen from the following table :

	1932	1931 (Centals)	1930
Washed or sulphured . . . . .	252,765	331,252	406,013
Of which:			
to the United States . . . . .	181,227	252,781	288,575
Edible . . . . .	744,858	963,463	1,190,987
Of which:			
to Argentina . . . . .	352,580	401,461	539,508
to the United States. . . . .	217,912	335,366	427,881
(American gallons)			
Washed or sulphured . . . . .	3,321,175	4,352,838	5,335,242
Of which:			
to the United States . . . . .	2,381,426	3,321,678	3,792,036
Edible . . . . .	9,787,853	12,660,438	15,650,235
Of which:			
to Argentina . . . . .	4,633,095	5,275,419	7,089,437
to the United States . . . . .	2,863,488	4,106,897	5,622,596

The oil re-exported after having been refined in Italy reached, in 1932, barely 682,412 centals (8,967,276 American gallons) compared with 913,773 (12,007,481) in 1931 and 1,033,559 (13,581,541) in 1930.

The large production in 1931-32 in Algeria and Tunis permitted large exports during 1932, in which year shipments to France and Italy (which are normally the largest markets for African oil), exceeded the average of 1923-1927. In 1931, on the contrary, these exports were much lower due to the small production of 1930-31.

Among the European importing countries, Norway in 1932 purchased from its largest source, Spain, a much larger quantity of oil than in the previous year and the same occurred in France as regards purchases from Algeria with the result that the Norwegian and French imports in 1932 were much higher than in 1931. In contrast, a contraction took place of German purchases in Italy, which was not entirely compensated for by the larger imports of Spanish oil.

The Swiss imports have continued the decrease already noted in 1931 after the very large import in 1930 which was almost double the average of 1923-27.

Great Britain, which in 1931 imported rather less than in the preceding three years, in 1932 considerably increased its foreign purchases of refined olive oil.

Besides Argentina and the United States, which have already been dealt with, the three importing countries of South-America, Brazil, Uruguay and Chile together in 1932 reduced their demand for olive oil.

*Prices.* — Prices of olive oil did not in 1932 show any substantial change from the tendency to fall which has, in the last quinquennium been characteristic for this as for other agricultural products; this tendency is clearly illustrated in the following table giving prices in the currencies of the respective countries

and in gold francs per quintal on three important markets for qualities of oil permitting a sufficiently exact comparison :

*Prices of olive oil in the currencies  
of the respective countries and in gold francs (per quintal).*

PERIOD		SPAIN (fine Tolosa)		ITALY (finest Bari)		TUNISIA (1st pressing)	
		pesetas	gold francs	liras	gold francs	francs	gold francs
<i>Average</i>	<i>1927</i>	262	232	953	252	1,128	229
"	<i>1928</i>	217	186	802	219	905	183
"	<i>1929</i>	222	170	636	173	720	146
"	<i>1930</i>	181	109	494	135	525	107
"	<i>1931</i>	211	104	554	151	558	113
January	1932	220	96	450	118	435	88
February	"	220	88	500	134	440	89
March	"	220	88	500	134	447	91
April	"	215	86	500	133	430	87
May	"	215	90	500	133	431	87
June	"	207	89	500	132	420	85
July	"	210	87	475	120	421	85
August	"	200	81	460	122	132	88
September	"	190	80	460	122	422	86
October	"	192	81	450	120	395	80
November	"	192	81	438	117	342	60
December	"	196	80	125	113	271	55
<i>Average</i>	<i>1932</i>	206	86	471	125	407	83

The series of monthly average prices in 1932 shows the usual phenomenon of a rapid and progressive fall in quotations in the latter period of the year when prospects indicate a large or moderate production in the coming season: for all three countries under examination for example, quotations show a decided fall in the period July-December with a minimum in December.

In the first months of 1933 the market situation has not shown any noteworthy variations.

M. C.

*Italy* : The olive trees have nearly all been pruned. In the southern and insular regions the buds have begun to shoot.

*Palestine* : Very heavy flowering of olives is reported throughout the country. Setting is starting under favourable conditions. Should this continue and the soil moisture be sufficient to bring the fruit to maturity, the outlook is good.

## COTTON

*U. S. S. R.* : The Government plan forecasts an area of 5,108,000 acres to be sown to cotton this spring compared with the area of 5,787,000 fixed in 1932 and that of 5,367,000 harvested in 1932.

*United States* : In the week ended on March 29 further light to moderate rains hindered work on the land in many areas of the cotton belt. Some planting had been done

in Southern Texas and parts of the eastern Gulf States. The following week ended on April 5 was generally warm, with frequent rains in nearly all sections of Lower Missouri and the Mississippi valley eastward. The fields were too wet for work in the central parts of the belt, and on the Atlantic coast except in some southern parts. Planting advanced in western sections and was beginning locally in southern Georgia and Alabama. Progress was made in Southern Texas.

*India* : The latest estimate of the cotton area in Madras is 1,976,000 acres compared with 2,255,000 in 1931-32 and 2,274,000, the average for the previous five seasons; percentages: 87.6 and 86.9. The production figure is 1,646,000 centals (344,000 bales) against 1,712,000 (358,000) and 1,816,000 (380,000) respectively; percentages: 96.1 and 90.7.

According to an official report dated March 23 for the whole of India, the condition of the cotton crop was, on the whole, reported to be fair.

*French West Africa* : Yields have been good in Senegal, which furnishes a little less than one quarter of the total production of the group. Production was, on the contrary, announced to be mediocre in Dahomey, which contributes about one tenth of the French West African crop.

*Egypt* . During March the weather was variable in Lower Egypt. It was favourable to sowing, but unfavourable to germination and growth. In Upper Egypt, however, it is generally considered favourable to sowing and germination. Sowing was in active progress during the first week of the month so that early sowing was over, and owing to favourable weather conditions the germination was good. Germination in areas sown later was not even owing to changeability of the weather, which was windy and relatively too cold for the season. Resowing, therefore, varied between 5% in Upper Egypt and 10% in early-sown areas in Lower Egypt.

It was over 20% in areas sown after the first ten days of the month. Sowing is over in the South of the Delta and Middle Egypt. In the North, it started earlier than last year, but progressed slowly. Hoing, resowing and watering of early-sown areas are in progress. The total area sown is estimated privately at about 2 million acres, a figure inferior only to the record area of 1930-31, which was 2,162,000 acres. The area of *Ashmuni-Zagora* varieties seems to have doubled, in comparison with that of last season while for the *Sakellaridis* area an increase of more than 40% is forecast, and different increases also for the other varieties, except only the *Pilion*. Water supply is adequate throughout the country.

Cotton ginned up to the end of March was as follows, in bales of 478 lb. net weight:

	1933	1932	1931	1930	1929
Sakellaridis . . .	223,100	236,900	326,000	487,000	470,500
Other varieties above :					
1 3/8 inches. . . .	101,100	946,700	966,400	1,064,400	1,035,000
1 1/4 inches. . . .	67,300				
1 1/8 inches. . . .	527,700				
Total . . .	919,200	1,183,600	1,292,400	1,552,000	1,505,500
Scarto (linters) . .	21,300	31,700	31,200	36,600	43,500

The figure of the ginnings up to the end of March 1933 is about 6% larger than that of the second estimate published in December (See Crop Reports of October, November and December, 1932). Ginnings must be over before 1 May, 1933. The third estimate will be published on Monday, 5 June, 1933.



*Uganda* : In the Eastern Province at the end of February appreciable quantities of cotton still remained to be marketed. Marketing was proceeding rapidly in Buganda, but the heaviest purchases were expected to be reflected in the March returns.

## FLAX

*Belgium* : An extension of the crop is expected.

*Hungary* : At the beginning of April sowings were in progress.

*U. S. S. R.* : The Government plan forecasts an area of 7,082,000 acres to be sown this spring: 5,700,000 for the production of fibre (*Dolgounetz* variety) and 1,399,000 for the production of seed. In 1932 the areas sown were respectively 6,200,000, and 1,584,000, giving a total of 7,781,000 acres.

*India* : Light rain fell in parts of Bihar and Orissa except in the second and third weeks of the month of March. In the United Provinces light rain fell in the two weeks ended on March 25 ; in the last week of the month light showers fell in some districts only ; hail damage occurred in two districts. Irrigated crops were doing well. In the Central Provinces heavy showers fell in the first week of March but the weather then became clear and warm with occasional clouds and light showers.

According to an official report dated March 23 for the whole of India, the linseed crop is reported to have been adversely affected by cold, frost and hailstorms. The current condition of the crop was on the whole fair.

## HEMP

*Hungary* : On 1 April sowing had been begun only sporadically.

*U. S. S. R.* : According to the Government plan, the area to be sown this spring to hemp, is 2,068,000 acres compared with 2,063,000 in 1932.

## TOBACCO

*Italy* : Seeding of tobacco beds was nearly finished in March.

*Canada* : The latest data of area and production of the various types of tobacco grown in Canada in 1932 compared with the corresponding figures for 1931 are as follows :

	1932	1931	% 1932 1931=100	1932	1931	% 1932 1931=100
	(Area in acres)			(Production in 000 lb.)		
Burley . . . . .	15,899	18,800	84.6	16,701	19,000	87.9
Bright flue-cured . . . . .	28,219	27,595	102.3	27,941	24,600	113.6
Dark air and fire-cured . . . . .	1,500	950	158.1	1,500	960	156.3
Cigar leaf . . . . .	4,450	4,885	91.1	4,139	4,500	92.0
Large pipe . . . . .	2,520	1,800	140.1	2,961	1,700	174.2
Small pipe. . . . .	1,550	1,030	150.4	852	540	157.8
<i>Total</i> . . . . .	<i>54,138</i>	<i>55,060</i>	<i>98.3</i>	<i>54,094</i>	<i>51,300</i>	<i>105.4</i>

Despite a decrease in area, production was larger in 1932 than in 1931. All types show increases in production except Burley and cigar leaf.

The quality of the Burley, cigar leaf and Quebec pipe tobaccos was somewhat impaired by marginal drying of the leaf which developed during the curing period. The Ontario flue crop was one of the finest on record. Over 90 % of the crop was primed as compared with not more than 10 % in 1931. This procedure, coupled with the growing of such typical cigarette varieties as Jamaica, Ponanza, Yellow Mammoth, White Stem Orinocco, Willow Leaf and Gold Tip, resulted in an excellent quality.

Prices showed definite decreases from the 1931 level. The fall was greatest in the case of flue-cured tobacco in Ontario, a decrease of over 20 % in the average price being recorded. The fall in the price of sterling was undoubtedly an important factor, together with the increased crop. For bright flue-cured the average farm price in 1932 was 16.0 cents per lb. compared with 20.5 in 1931 and for Burley, 7.0 cents per lb. against 8.5.

*Algeria* : Transplanting of tobacco began in the last week of March; despite the fairly heavy rainfall, the soil was prepared under good conditions. The sowings have not been damaged much by the bad weather and are generally in good condition. It seems that the adverse market situation has resulted in a smaller area of sowings.

*Union of South Africa* : The crop this season, excluding the production in native locations and reserves, is estimated at 9,250,000 lb. a decrease of 56% on that of 1931-32 and of 46 % on the average of the five years ending 1930-31. Production of Turkish tobacco, which was already in 1931-32 less than one-quarter of the figure in the previous years, has this year been negligible.

For those areas in which the marketing of the crop is controlled the estimate has been based on the actual receipts of cooperative societies in respect of the previous crop, of which they controlled more than 70 %. The estimate of last season's production has been revised in the light of the actual receipts by cooperative societies.

The poor crop this season is chiefly the result of the droughty conditions that prevailed over the main producing areas of the Union especially in the Western Transvaal and the failure of the irrigation water supply. The production of Turkish tobacco, which is limited to the southwestern districts of the Cape Province, has been deliberately curtailed owing to the overproduction of this type in previous years.

## OTHER PRODUCTS

### Hops.

*Hungary* : At the beginning of April growth had been renewed.

### Cacao.

*Brazil* : Entries of cacao by rail in the Ilheos and Rio de Contas zones during February were at a low level compared with preceding years though the aggregate for the 11 months May 1932 to March 1933 showed an increase on the same period of the previous campaign.

	March 1933	May 1932 to March 1933	March 1932	May 1931 to March 1932
Ilheos zone (1000 lb) . . . .	3.330	107,684	7.937	101.704
Rio de Contas zone (1000 lb).	110	15,347	1,587	9.608

The conditions during March were favourable for the coming crop. Good rains fell and prospects were considered to be satisfactory.

The collection of the crop was expected to begin this month.

Rainfall at Ilheos was 222.25 mm. or 8.75 inches (average 240.28 mm. or 9.46 inches).

*Trinidad* : Picking proceeded with little interruption in February and the earlier part of March. Witchbroom (*Marasmius perniciosus*) was beginning to yield to control measures.

*Nigeria* : There has been a good crop this season and most of it is now in. Prices opened a little higher than last season and remained fairly level through the main crop period with but small fluctuation. The quantity graded and passed by produce inspectors in the Western Area from 1 October 1932 to 31 January 1933 shows an increase of 18 % on that for the corresponding period of 1931-32.

The following table shows the quantities graded in the important cacao areas, in thousands of pounds :

	Oct. 1932 to Jan. 1933	Oct. 1931 to Jan. 1932
Lagos . . . . .	9,916	8,062
Ilori . . . . .	16,426	11,782
Abeokuta . . . . .	4,343	2,793
Ijebu-Ode . . . . .	15,714	12,638
Ibadan . . . . .	35,858	35,784
Oshogbo . . . . .	17,360	13,324
Total . . . . .	99,617	84,383

### Coffee.

*Kenya* : According to the January estimate, coffee production in 1932-33 is 332,000 centials as against 203,000 in 1931-32 (163.7 %) and 234,000, the average for the preceding quinquennium (141.7 %).

### Tea.

*India* : According to a report dated March 30 received from the Department of Commercial Intelligence and Statistics, the weather during February in North India was generally seasonable and for the most part dry with occasional showers, no leaf was plucked during the month of February. In South India, the weather was cold and a little rain fell towards the end of February which improved crop prospects; the outturn was 6.04 % ahead of that to the same date of last year.

### Groundnuts.

*United States* : According to the statement of farmers' intentions to plant as on March 1, 1933, it is intended to plant 1,806,000 acres to groundnuts for nuts, or about 93.5 % of last year's harvested acreage of 1,932,000 acres.

*French West Africa* : Production has been good in Senegal, which alone furnishes over one half of the French West African production; yields are satisfactory except in certain cantons of Lower-Senegal, Cayor and Djoloff, where the crops were damaged by a long period of drought during the maturity stage; everywhere else the nuts are large and generally of good quality. In Dahomey, where production is relatively less important (3 % to 4 % of the total), yields are reported to be poor owing to the drought.

*Union of South Africa* : The total European-grown crop for the present season is estimated at 118,800 centals against 67,500 in 1931-32 and 122,900 on the average of the five years ending 1930-31, an increase of 76.0 % and a decrease of 3.3 % respectively.

Complaints of drought were general and great difficulty was experienced in giving a reliable estimate.

### **Colza and sesame.**

*Austria* : At the beginning of April winter colza was developing well. Crop condition was 2.1 against 2.3 on 1 March this year and 3.1 on 1 April 1932.

*Italy* : The colza sowings were nearly completed in March.

*Poland* : The crop condition of winter colza, by the Polish system, was 3.3 on March 15, 1933 against 3.6 on November 15 and 2.8 on March 15 of last year.

*India* : Light rain fell in parts of Bihar and Orissa except in the second and third weeks of March. No rain fell in Bengal in the first three weeks of March but later light showers fell in places. Standing crops needed rain. Harvesting continued during the month. In the Punjab light rains fell in many districts in the first three weeks of March. In the week ended on the 27th beneficial rain fell in all districts and condition was generally average to good on irrigated lands and below average to average elsewhere. Some local damage was caused by cold, « tela » or hail.

The latest estimate of the sesame area is 5,982,000 acres compared with 5,639,000 in 1931-32 and 5,373,000 on the average for the preceding five seasons, percentages : 106.1 and 111.3. Production : 12,208,000 centals (610,000 short tons) against 10,662,000 (533,000) and 10,886,000 (544,000) respectively ; percentages : 114.5 and 112.1.

*Palestine* : Ploughing for the sesame crop is in progress. Only a very limited area will be sown unless rain falls in the immediate future.

### **Jute.**

*India* : In Bengal the weather was dry in the first three weeks of March. In the following two weeks to April 5, light showers fell in places but more was badly needed to facilitate work on the land preparatory to sowing.

### **Sericulture.**

*U. S. S. R.* : According to the Government plan, the quantity of cocoons to be purchased by the State from producers in 1933 has been fixed at 33,069,000 lb., assuming an average production of 62 lb. per ounce of eggs. Purchases of cocoons in preceding years were as follows : 22,487,000 lb. in 1932 ; 27,558,000 in 1931 and 31,967,000 in 1930.

Owing to the constant decrease in the purchases of cocoons, as a result of reduced production, the Government has taken a series of measures to increase production in the current year.

## SUPPLEMENTARY FIGURES

As the production and area for most countries were published in the February number of the Monthly Crop Report and Agricultural Statistics, it is not necessary to repeat them again this month. Hence only the new data and any modifications of the figures published last month are given in continuation. In another table is shown the total world production based on the figures received up to the time of going to press.

COUNTRIES	AREA					PRODUCTION								
	1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33		1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33		
				1931 and 1931/32	Aver. 1932/33 = 100							1931 and 1931/32	Aver. 1932/33 = 100	
1,000 acres					1,000 centals			1,000 bushels						
WHEAT														
Hungary . . . .	3,793	4,011	3,953	94.6	95.9	38,678	43,531	49,246	64,462	72,550	82,075	88.9	78.5	
Rumania . . . .	7,091	8,566	7,625	82.8	93.0	33,322	81,181	66,443	55,536	135,299	110,736	41.0	50.2	
—														
Kenya 1) . . . .	41	43	67	94.3	60.5	170	174	404	283	290	674	97.9	42.1	
French Morocco .	2,713	2,537	2,699	106.9	100.5	16,782	17,870	14,633	27,970	29,783	24,388	93.9	114.7	
—														
Chile . . . . .	1,570	1,517	1,635	103.5	96.1	13,076	12,712	16,597	21,793	21,187	27,661	102.9	78.8	
RYE.														
Hungary . . . .	1,553	1,486	1,631	104.5	95.2	16,969	12,136	16,374	30,301	21,672	29,240	139.8	103.6	
Rumania . . . .	861	1,006	779	85.6	110.4	5,887	7,819	7,123	10,512	13,962	12,721	75.3	82.6	
—														
French Morocco .	2	2	2	90.6	101.6	11	11	11	19	19	19	100.8	100.3	
BARLEY.														
Hungary . . . .	1,160	1,165	1,077	99.5	107.8	15,854	10,496	13,327	33,030	21,867	27,765	151.0	119.0	
Rumania . . . .	4,416	4,742	4,494	93.1	98.2	32,345	31,182	42,194	67,387	64,964	87,906	103.7	76.7	
—														
French Morocco .	3,298	3,222	2,995	102.4	110.1	22,630	28,335	18,917	47,147	59,032	39,411	79.9	119.6	
OATS.														
Hungary . . . .	578	596	665	97.0	86.9	6,962	4,278	7,753	21,756	13,368	24,227	162.7	89.8	
—														
French Morocco .	56	60	82	93.7	68.3	405	529	616	1,267	1,654	1,926	76.6	65.8	
POTATOES.														
Hungary . . . .	738	701	658	105.2	112.2	34,336	31,912	41,269	57,226	53,185	68,781	107.6	83.2	
Rumania . . . .	471	474	484	99.4	97.3	36,773	40,789	43,463	61,287	67,981	72,437	90.2	84.6	
SUGAR-BEET														
1,000 short tons														
Hungary . . . .	105	134	172	78.0	60.8	18,717	21,301	32,654	936	1,065	1,633	87.9	57.3	

COUNTRIES	AREA					PRODUCTION									
	1932 and 1931/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1931/33		1932 and 1931/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1931/32	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1931/33			
				1931 and 1931/32 = 100	Aver. = 100							1931 and 1931/32 = 100	Aver. = 100		
1,000 acres															
VINES (WINE).						1,000 Imperial gallons			1,000 American gallons						
French Morocco .	42	34	13	126.5	335.5	8,290	6,599	3,344	9,956	7,925	4,015	125.6	247.9		
COTTON (GINNED).						Centals			Bales of 478 lb						
India . . . . .	22,558	23,722	25,274	95.1	99.3	18,064	16,100	21,788	3,779	3,368	4,558	112.2	82.9		
FLAX (FIBRE)						1,000 pounds									
Hungary . . . .	15	44	13	34.0	115.9	51	133	65	5,136	13,264	6,518	38.7	78.8		
Rumania . . . .	54	69	47	78.9	115.8	...	158	52	...	15,756	5,198	...	...		
LINSEED.						1,000 bushels									
Hungary . . . .	15	44	13	34.0	115.9	53	174	63	95	310	112	30.8	85.0		
Rumania . . . .	54	69	47	78.9	115.8	...	293	156	...	523	279	...	...		
French Morocco .	53	89	50	60.3	107.6	207	522	231	369	932	413	39.6	89.3		
HEMP (FIBRE).						1,000 pounds									
Hungary . . . .	17	15	22	106.6	74.9	110	88	154	10,965	8,763	15,406	125.1	71.2		
HEMPSEED.															
Hungary . . . .	17	15	22	106.6	74.9	73	55	89	7,253	5,493	8,925	132.0	81.3		
TOBACCO.															
Hungary . . . .	61	62	—	97.7	—	810	804	651	80,959	80,404	65,104	100.7	124.4		
Canada . . . . .	54	55	40	98.3	136.5	541	513	363	54,094	51,300	36,263	105.4	149.2		
HOPS															
Hungary . . . .	2)	1	2)	42.8	54.7	1	3	2	141	274	219	51.4	64.5		

1) Europeans crops only. — 2) Area under 500 acres.

## TOTALS OF WORLD AGRICULTURAL PRODUCTION

The following totals have been obtained from the data in the tables published for each product in January, which have been revised and completed. With the name of each product is indicated the number of countries for which data for 1932 are at present available and also the percentage of their total production in 1931 to world production in the same year as published in the 1931-32 Yearbook, when they comprised nearly all producing countries, except U. S. S. R.

Crop, number of countries comprised in the total, and percentages of world production	AREA						PRODUCTION							
	1932 and 1931-32	1931 and 1931-32	Average 1926 to 1930 and 1926-27 to 1930-31	Percentages for 1932 and 1932-33		British weights			American weights			Percentages for 1932 and 1932-33		
				1931 and 1931-1932 = 100	Average = 100	1932 and 1931-32	1931 and 1931-32	Average 1926 to 1930 and 1926-27 to 1930-31	1932 and 1931-32	1931 and 1931-32	Average 1926 to 1930 and 1926-27 to 1930-31	1931 and 1931-1932 = 100	Average = 100	
thousand acres			%		thousand centals			thousand bushels			%			
Wheat (49 countr. 98 %) . . . . .	251,325	247,252	243,407	101.6	103.3	2,227,633	2,247,922	2,201,824	3,712,648	3,746,462	3,669,633	99.1	101.2	
Rye (30 countries 99 %) . . . . .	46,931	47,035	47,964	99.8	97.8	561,934	468,431	525,399	1,003,456	836,486	938,214	120.0	107.0	
Barley (43 countr. 90 %) . . . . .	64,080	62,731	61,622	102.2	104.0	714,430	619,516	678,455	1,488,422	1,290,682	1,413,473	115.3	105.3	
Oats (38 countries 98 %) . . . . .	101,890	100,855	102,558	101.0	99.3	1,162,731	1,042,179	1,135,865	3,633,508	3,256,787	3,549,553	111.6	102.4	
Maize (26 countries 86 %) . . . . .	165,647	163,304	154,717	101.4	107.1	2,324,844	2,096,958	2,074,678	4,151,519	3,744,578	3,704,792	110.9	112.1	
Rice (rough) (15 countr. 87 %) . . . . .	116,187	117,723	114,597	98.7	101.4	1,661,745	1,697,540	1,650,260	3,692,698	3,772,238	3,667,175	97.9	100.7	
Potatoes (34 countr. 95 %) . . . . .	30,916	30,595	29,468	101.0	104.9	3,410,336	3,255,557	3,009,355	5,683,779	5,425,821	5,015,492	104.8	113.3	
Sugar-beet (20 c. 97 %) . . . . .	4,122	4,626	5,105	89.1	80.7	981,418	1,023,918	1,130,808	49,070	51,195	56,540	95.8	86.8	
Cotton ginned (16 countr. 94 %) . . . . .	69,033	73,290	78,778	94.2	87.4	96,208	115,410	113,673	20,127	24,144	23,781	84.2	85.3	
Linseed (17 countr. 94 %) . . . . .	11,807	14,762	13,818	80.0	85.4	47,792	68,524	66,520	85,343	122,365	118,787	69.7	71.5	
Flax (fibre) (15 countr. 90 %) . . . . .	583	783	1,038	74.4	56.2	1,874	2,626	4,663	187,394	262,571	466,279	71.4	40.2	
Hemp (fibre) (8 countr. 50 %) . . . . .	274	277	376	99.1	73.0	1,825	1,867	3,009	182,543	186,732	300,932	97.8	60.7	
Tobacco (13 countries 49 %) . . . . .	2,103	2,899	2,689	72.5	78.2	16,230	23,669	21,533	1,622,985	2,366,891	2,153,262	68.6	75.4	
Hops (8 c. 95 %) . . . . .	94	109	141	86.4	66.7	783	922	1,367	78,264	92,154	136,687	84.9	57.3	
Olive oil (7 countr. 96 %) . . . . .	—	—	—	—	—	17,178	18,431	16,744	225,735	242,190	220,028	93.2	102.6	
Vines (19 c. 96 %) . . . . .	—	—	—	—	—	3,533,466	3,552,890	3,254,977	4,243,376	4,266,702	3,908,935	99.5	108.6	
Silk (8 c. 92 %) . . . . .	2) 6,818	2) 7,020	2) 7,549	97.1	90.3	851,236	919,474	947,989	851,236	919,474	947,989	92.6	89.9	

1) Wine. — 2) Eggs in incubation. — 3) Cocoons.

## FODDER CROPS

*Germany* : Growth of meadows and pastures was at first rather weak. Clover was also rather poor at the beginning of April.

*Austria* : At the beginning of April clovers generally looked healthy though growth was backward. Permanent meadows also require warmth and moisture to recover normal development. At the end of March condition of the principal fodder crops was as follows : red clover 2.4 (against 2.6 on 1 March this year and 3.0 on 1 April 1932), alfalfa 2.5 (2.5, 3.0), mixed clover 2.5 (2.6, 2.8), permanent meadows 2.5 (2.5, 2.9) and pastures 2.4 (2.4, 3.2).

*Belgium* . Pastures and clover and alfalfa crops are greening.

*Irish Free State* : The early part of March was wet and cold but the latter half was fine and pastures were beginning to show the effects of the genial weather by the end of the month.

*France* : The dry weather, which persisted since about March 20, began to cause some damage to the meadows and pastures, especially in the West and Southwest. Although preparatory work and sowings of fodder grains were favoured by good conditions, sprouting was hindered by the dry weather.

*Great Britain and Northern Ireland* : The heavy snowfall at the end of February was followed during the first week of March in England and Wales by cold wet weather, with flooding in many districts, but subsequently, as in Scotland throughout the whole of the month, the weather was exceptionally fine and dry. Low temperatures at night rather retarded the growth of grass and at the end of the month pastures were still bare. In some parts of England and Wales, particularly on heavy land, temporary meadows were checked by the wet and frost early in the month but were generally vigorous and healthy by the end of March. In Northern Ireland the weather was very changeable.

*Hungary* : At the beginning of April sowings of mangels were being made. Other sown fodders wintered well and were developing vigorously but owing to last year's drought are thin. Crimson clover is poor in some departments of Transdanubia. Three-month clover was already sown almost everywhere.

Growth of grass on permanent meadows had already begun, its development was checked, however, by cold and lack of moisture.

*Italy* : Sowing of fodder crops was nearly completed in the latter half of March. Sowing of temporary meadows (*marcite*) has made progress. Permanent meadows continue, on the whole, to give good hopes.

*Lithuania* : In March the weather favoured clover.

*Poland* : The crop condition of clover, by the Polish system, was 3.2 on March 15 of the current year against 3.4 and 2.9 as on November 15 and March 15 of last year.



*Switzerland* : Permanent and temporary meadows in general have strong, healthy stands but growth is still very backward owing to drought and night frosts. Crop condition was as follows on 1 April.

	1 April				
	1933	1932	1931	1930	1929
Permanent meadows . . . .	3.9	3.5	3.6	4.1	3.9
Temporary meadows . . . .	3.8	3.4	3.6	4.1	4.0

*United States* : According to the statement of farmers' intentions to plant as on March 1, 1932, it is intended to sow 53,389,000 acres to tame hay or 1.1 % more than last year's harvested acreage of 52,819,000 acres.

*Palestine* : The fifth cutting of *bersim* is in progress in irrigated areas. Oat and vetch crops (hay mixture) have benefited by the rains, but yields in general are below the average. Grazing is normal throughout the country.

*Algeria* : Due to the abundant rainfall, the growth of permanent and temporary meadows is remarkable. The pastures have everywhere good stands and the grass is growing vigorously.

*Egypt* : The third cutting of *bersim* is being taken from the early sown areas and some of the general areas. Hay is being made in the large estates. Areas left for the production of grains are maturing. Crop condition as on 1 April : 100, the same as on 1 March and 1 April 1932.

*French Morocco* : Pasturage is generally plentiful following the rains which replenished sources.

## LIVESTOCK AND DERIVATIVES

### Number of Pigs in Germany.

In the quarter from the beginning of December 1932 to the beginning of March 1933 the pig population for the season showed a relative decline, though not so markedly as in the same period a year previously. The general total as recently established is a little smaller than in 1932 and much smaller than in 1931 but considerably larger than in 1930 at the corresponding season.

The number of pigs under eight weeks as well as of those from six months to a year was at the beginning of March 1933 relatively high and higher than at the beginning of March 1932. According to the last estimate young pigs showed an increase over the total enumerated last December, while in the corresponding period a year previously there was a decrease.

While the number of pigs for slaughter shows a decrease on that of last December, the number of sows in farrow shows the usual increase ; the latter shows however, in comparison with the data for the beginning of March 1932 a decrease of 4.2 %.

## Numbers of pigs in Germany (1).

CLASSIFICATION BY SEX AND AGE	3 March 1933	1 Dec. 1932	1 Sept. 1932	1 June 1932	1 March 1932	1 Dec. 1931	1 Sept. 1931	1 June 1931	2 March 1931	1 Dec. 1930	1 Sept. 1930	2 June 1930	1 March 1930
	(1000 head).												
Totals . . . . .	20,243	22,814	24,176	21,289	20,633	23,808	25,348	22,529	21,790	23,442	23,423	19,805	18,649
Suckling pigs under 8 weeks of age . . . . .	5,154	4,826	6,326	5,501	5,014	5,128	6,804	6,027	5,790	5,469	6,522	5,091	5,012
Young pigs from 8 weeks to 6 months of age . . . . .	9,382	9,869	10,341	9,832	9,976	10,484	10,980	10,351	10,231	10,035	9,809	9,178	8,555
Pigs from 6 months to 1 year of age . . . . .	3,966	5,794	5,435	4,109	3,853	5,782	5,391	4,172	3,939	5,484	5,125	3,842	3,487
Of which:													
Boars for service. . . . .	46	49	46	46	47	50	51	54	58	61	57	57	54
Sows for breeding (tot- al) . . . . .	528 (316)	485 (259)	517 (255)	608 (374)	549 (323)	494 (251)	569 (276)	693 (409)	706 (425)	674 (369)	812 (442)	876 (574)	722 (455)
Sows covered . . . . .	3,392	5,260	4,872	3,455	3,256	5,238	4,771	3,425	3,176	4,749	4,256	2,909	2,712
Other swine . . . . .													
Pigs 1 year old and over . . . . .	1,742	2,325	2,075	1,847	1,791	2,414	2,173	1,979	1,870	2,455	1,967	1,694	1,595
Of which:													
Boars for service. . . . .	66	62	75	73	67	63	73	71	62	60	61	57	51
Sows for breeding (tot- al) . . . . .	1,381 (832)	1,382 (849)	1,559 (832)	1,534 (938)	1,425 (875)	1,459 (870)	1,661 (902)	1,663 (1,021)	1,517 (927)	1,503 (942)	1,467 (861)	1,356 (915)	1,229 (792)
Sows covered . . . . .													
Other swine . . . . .	294	882	440	240	298	893	439	246	291	892	440	280	315

1) Present territory, excluding the Saar.

## Number of Pigs in England and Wales.

The Ministry of Agriculture recently made an enquiry as to the number of pigs on 4 February 1933 on holdings exceeding one acre in extent on which there were pigs in June 1932. Replies were received from occupiers owning about 90 % of the pigs returned in June and a satisfactory estimate can therefore be made. Until the figures of the annual returns next June are available the results of the February enquiry cannot, however, be taken as an indication of the trend of pig production. The results of the enquiry, along with those of the last annual return are set out in the following table.

	4 February 1933	4 June 1932
	(thousands)	
Sows kept for breeding . . . . .	402.3	425.2
Boars being used for service . . . . .	29.0	29.3
Other pigs :		
under 2 months . . . . .	752.0	2,730.1
2 months and over . . . . .	1,640.0	
Total . . . . .	2,823.3	3,184.6

Sows kept for breeding (including gilts in pig) thus declined by 5 %, boars by 1 % and all other pigs by 12 %.

For reasons of economy forms of enquiry were sent only to those occupiers who returned pigs last June ; these, however, number only 200,000 out of the total of nearly 400,000 occupiers. On the basis of samples obtained by the Ministry it is considered that an addition of 2-3 % to the figure given in the foregoing table would cover the pigs kept in February last by occupiers who did not return any pigs in the previous June.

In the past no information has been available as to the number of pigs kept by occupiers of holdings of one acre or less, cottagers and other. On the present occasion the Ministry has obtained from its crop reporters approximate estimates of the number of such pigs. Though these estimates show a very considerable degree of variation throughout the country they indicate when taken as a whole that the number of pigs outside the scope of the returns is equivalent to about  $7\frac{1}{2}$  % of the total returned by occupiers.

The total addition which thus requires to be made to the figures in the above table is accordingly about 10 % and on this basis the total number of pigs in England and Wales at the date of the special enquiry may be estimated at 3,100,000.

### **The New Zealand Dairying Industry in 1931-32.**

The number of dairy factories in operation in 1931-32 was 480 against 482 in 1930-31, while the number of persons finding employment declined by 5 %. The cost of butterfat purchased by factories dropped by 1 % and the total value of products by 2 %.

During 1931-32 butterfat aggregating 307,488,000 lb. was sent to dairy factories, 4 % more than in the previous year. Of this amount 73 % was used for butter and 26 % was contained in milk used for making cheese, while the remaining 1 % was used for condensed and dried milk and other purposes. The quantities used for butter and cheese were respectively 7 % greater and 3 % smaller than in 1930-31, while the butterfat used for the manufacture of condensed and dried milk decreased by 16 %. The quantity of milk used for cheese-making increased by 8 %.

The production of butter was 2,439,000 cwt., an increase of 6 % on that of 1930-31 and the production of cheese was 1,782,000 cwt., a decrease of 4 %. Values, on the contrary were respectively 2 % smaller and 4 % greater.

### **Current information on livestock and derivatives**

*Irish Free State* : Adequate supplies of fodder, roots and grain to meet all normal requirements are available on most farms.

Milk yields in March were slightly above normal for the time of year owing to the favourable weather conditions.

*France* . The livestock situation, favoured by the not too severe winter, is generally good. Fodder reserves were, however, already becoming short at the beginning of March especially in Normandy, Limousine and Brittany due partly to the relatively

large number of animals kept during the winter because of the market situation. The drought which has persisted since about March 20 in most areas after a rainy period, has checked the growth of the grass and brought about the danger of a fodder shortage with the result that part of the animals will probably have to be sold. The livestock market has, until now, showed a slow but regular recovery and the economic situation has appreciably improved.

Dairy production, including that of butter, which was maintained at a relatively high level during the winter has shown a seasonal increase. Egg production shows the same tendency.

*Great Britain and Northern Ireland* : Store cattle in Northern Ireland were in good health and condition generally in March and appeared to have withstood the effects of the winter very well. The number of cattle stall-fed during last season was larger than usual, mainly due to the plentiful supplies of feeding-stuffs available at comparatively low prices.

In England and Wales supplies of winter keep are adequate. In Scotland good hay and straw are plentiful but in a few districts roots are now scarce ; ample supplies of concentrated feeding-stuffs are available , milling offals, which have been for a long time scarce and dear are now obtainable in larger quantities and are cheaper.

Milk yields in England and Wales and in Ireland were up to average and in some parts of Scotland slightly above average.

*Netherlands* : Use of concentrated feeds continues to be very restricted. Due to the large proportion of milch cows hay and other dry feeds were becoming scarce and the possibility of pasturing was anxiously awaited. Despite the less rational feeding, milk production increased in Groningen, Friesland, Drenthe, Overijssel, Gelderen, North Brabant and Lamburg, thanks to the increase in the number of cows. Only in North Holland was a decrease reported

*Canada* : Production of processed cheese in 1932 amounted to 10,714,514 lb compared with 12,048,012 in 1931, 14,633,733 in 1930, 17,707,822 in 1929 and 19,781,006 in 1928. Both production and exports of this cheese have decreased uninterruptedly since 1928.

*United States* : According to a report published by the Department of Agriculture towards the middle of March, the early lamb crop of 1933 in the principal early lambing States, as a whole, is about 8 % smaller than the early lamb crop of 1932. The condition of early lambs probably averages somewhat better than on March 1, 1932. In the far western early lambing States, except California and western Oregon, weather and feed conditions in January and February this year were much more favourable than last year, when they were poor. In the eastern and middle western areas feed conditions have been very good, but weather in February this year was not as favourable as in February 1932 and the losses of young lambs were larger this year.

In the following summary are given the latest data for the last three years of production of shorn and pulled wool, number of sheep shorn and weight per fleece :

	Shorn	Wool production Pulled (ooo lb.)	Total	Weight per fleece Shorn (lb )	Pulled	Number of sheep shorn (1) (ooo head)
1932 . . . . .	344,354	67,100	411,454	7.75	3.34	44,431
1931 . . . . .	372,228	66,100	438,328	8.04	3.24	46,284
1930 . . . . .	350,311	61,900	412,211	7.91	3.32	44,267

(1) Includes fleeces shorn at commercial feeding plants.

*Algeria :* The general condition of livestock at the end of March remained very satisfactory, despite some isolated cases of infectious disease. Feed is everywhere abundant.

These favourable circumstances permit the anticipation of a partial recovery of Algerian livestock which was severely reduced in the winter of 1930-31. This recovery had already begun during last winter but was relatively small; the number of sheep, which fell from 7,158,801 head in 1930 to 4,670,795 in the spring of 1931, increased by only 598,243 head in 1932, still remaining below the very low figure of 1928. Despite the adverse conditions of last winter, the economic situation hardly permits the hope of a complete recovery of sheep flocks.

*Union of South Africa :* The rainfall in February was generally insufficient, being the lowest for over twenty years. Heavy losses of stock continued to be experienced in the Cape Northwestern districts and unless heavy rains fell during March and April it was expected that large tracts would be evacuated. No improvement was reported for the southern Free State, Bechuanaland and the inland areas of the Eastern Province; boreholes and springs had given in and very little grazing was available. Veld was, however, still good over the greater part of the Karroo and sheep were in good condition but the water supply was becoming scarce and was causing some anxiety. Conditions in the northern Transvaal lowveld were, however, more favourable and the area had enjoyed fairly general rains. The restrictions on the movement of stock and agricultural products in many of the Transvaal districts as a result of the outbreaks of foot-and-mouth disease added further, however, to the difficulties of farmers in that province. In Natal conditions were comparatively favourable despite the drought in January and February and stock and grazing were still good.

## TRADE

COUNTRIES	FEBRUARY				SEVEN MONTHS (August 1-February 28)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat. — Thousand centals (1 cental = 100 lb.)</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	4	703	0	0	1,175	4,070	0	0	5,688	0
Hungary . . . . .	245	99	0	0	1,861	6,594	0	0	7,912	0
Lithuania . . . . .	0	7	0	0	0	9	0	0	20	0
Poland . . . . .	112	154	71	0	203	425	478	324	1,598	346
Rumania . . . . .	0	322	2	0	24	19,557	7	4	21,200	7
U. S. S. R. . . . .	...	...	...	...	1) 10,551	1) 38,757	1) 1,373	1) 0	39,423	1,515
Yugoslavia . . . . .	0	179	0	0	498	6,841	0	0	8,796	0
Canada . . . . .	6,554	5,939	2	2	99,616	68,610	29	51	109,685	75
United States . . . . .	437	2,789	267	465	11,076	33,193	3,098	4,923	52,805	7,361
Argentina . . . . .	9,852	12,086	—	—	31,808	39,635	—	—	81,463	—
Chile . . . . .	...	...	...	...	2) 4	2) 302	2) 0	2) 0	9	0
Turkey . . . . .	22	128	...	...	79	489	0	7	913	0
Algeria . . . . .	71	456	75	71	3,814	2,282	785	988	4,837	1,462
Tunis . . . . .	121	40	24	31	2,456	1,618	326	293	5,337	401
Australia . . . . .	14,035	10,979	0	0	42,624	37,615	0	0	73,793	0
<i>Importing Countries:</i>										
Germany . . . . .	1,049	154	1,034	1,574	11,927	7,072	10,972	10,386	7,313	21,006
Austria . . . . .	0	0	542	320	0	0	3,472	4,072	0	6,418
Belgium . . . . .	179	370	1,581	1,881	1,045	2,496	14,392	17,990	3,587	31,478
Denmark . . . . .	0	0	595	337	13	9	4,131	6,188	9	8,719
Spain . . . . .	0	0	0	0	0	0	0	35	0	6,482
Estonia . . . . .	0	0	0	13	0	0	0	165	0	256
Irish Free State . . . . .	0	0	650	370	4	7	4,310	3,682	13	6,369
Finland . . . . .	0	0	31	11	0	0	534	247	0	428
France . . . . .	0	0	827	2,427	46	9	15,651	24,544	9	53,140
Gr. Brit. and N. Irel. . . . .	22	18	8,532	9,520	236	276	67,082	84,071	1,206	137,664
Greece . . . . .	0	0	745	1,248	0	0	6,709	8,126	0	14,116
Italy . . . . .	0	0	1,076	1,616	13	18	6,400	6,080	18	22,547
Latvia . . . . .	0	0	0	44	2	0	15	311	0	375
Norway . . . . .	0	0	260	399	0	0	1,949	2,174	0	3,294
Netherlands . . . . .	4	13	1,071	1,396	472	90	9,436	10,939	110	17,919
Portugal . . . . .	—	—	20	7	—	—	282	478	—	1,393
Sweden . . . . .	0	2	57	227	9	2	1,470	2,180	9	4,054
Switzerland . . . . .	0	2	741	520	13	7	6,936	8,093	18	12,683
Czechoslovakia . . . . .	0	0	388	785	2	2	1,365	8,201	4	13,199
India . . . . .	2	4	355	0	33	161	355	179	183	179
Japan . . . . .	—	—	1,276	2,337	—	—	5,809	8,045	—	17,070
Syria and Lebanon . . . . .	4	2	4	11	254	428	90	18	511	328
Egypt . . . . .	...	...	...	...	2) 2	2) 0	2) 0	2) 174	2	994
Union of South Africa . . . . .	...	...	...	...	2) 0	2) 0	2) 137	2) 518	2	1,034
New Zealand . . . . .	...	...	...	...	2) 0	2) 0	2) 562	2) 53	0	258
<b>Totals . . . . .</b>	<b>32,711</b>	<b>34,446</b>	<b>20,228</b>	<b>25,672</b>	<b>219,860</b>	<b>270,274</b>	<b>168,457</b>	<b>213,537</b>	<b>426,473</b>	<b>392,770</b>
<b>Rye. — Thousand centals (1 cental = 100 lb.)</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	2	33	0	0	51	915	0	0	990	0
Hungary . . . . .	68	35	0	0	540	842	0	0	1,486	0
Lithuania . . . . .	0	0	0	0	2	0	0	2	9	2
Poland . . . . .	265	423	13	0	4,096	1,570	216	123	2,513	123
Rumania . . . . .	0	26	0	0	9	1,486	0	0	1,678	0
U. S. S. R. . . . .	...	...	...	...	1) 3,748	1) 19,357	—	—	23,640	—
Canada . . . . .	24	170	0	0	1,459	1,799	0	0	5,066	0
United States . . . . .	0	2	—	—	18	33	—	—	622	—
Argentina . . . . .	302	922	—	—	608	1,947	—	—	4,769	—
Turkey . . . . .	33	66	0	0	218	410	0	0	690	0
Algeria . . . . .	0	0	0	0	11	11	0	0	31	0
<i>Importing Countries:</i>										
Germany . . . . .	494	42	395	463	2,806	2,004	4,793	2,663	2,046	12,103
Austria . . . . .	0	0	15	49	0	0	128	866	0	1,728
Belgium . . . . .	22	20	223	168	194	287	1,784	1,413	639	2,709
Denmark . . . . .	0	0	348	110	0	0	3,937	2,963	0	4,731
Estonia . . . . .	0	0	0	0	0	0	0	7	0	13
Finland . . . . .	0	0	2	13	0	0	659	328	0	1,202
France . . . . .	0	0	26	148	0	0	328	1,034	0	1,737
Italy . . . . .	0	0	22	13	0	0	192	77	0	157
Latvia . . . . .	0	0	0	9	0	0	0	66	0	99
Norway . . . . .	—	—	112	324	—	—	1,634	2,399	—	3,415
Netherlands . . . . .	2	18	348	355	40	262	2,606	2,485	331	4,193
Sweden . . . . .	0	0	2	99	0	0	247	708	26	1,334
Switzerland . . . . .	0	0	31	7	0	0	238	53	0	108
Czechoslovakia . . . . .	0	0	0	271	49	4	93	4,169	7	5,124
<b>Totals . . . . .</b>	<b>1,212</b>	<b>1,757</b>	<b>1,537</b>	<b>2,029</b>	<b>13,849</b>	<b>30,927</b>	<b>16,855</b>	<b>19,361</b>	<b>44,543</b>	<b>38,778</b>

1) 2) See notes page 272.

COUNTRIES	FEBRUARY				SEVEN MONTHS (August 1-FEBRUARY 28)				TWELVE MONTHS (August 1-July 31)			
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS		IMPORTS	
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32	1931-32	1931-32
<b>Wheat flour. — Thousand centals (1 cental = 100 lb.).</b>												
<i>Exporting Countries:</i>												
Germany . . . . .	209	4	2	26	970	46	37	128	64	229		
Belgium . . . . .	4	4	2	2	35	40	53	40	73	51		
Bulgaria . . . . .	2	44	0	0	49	401	0	0	752	0		
Spain . . . . .	0	0	0	0	4	13	0	0	18	0		
France . . . . .	401	348	29	20	2,258	3,620	289	154	4,764	262		
Hungary . . . . .	46	62	0	0	644	1,532	0	0	2,130	0		
Italy . . . . .	187	216	20	24	2,277	1,484	159	190	2,235	287		
Latvia . . . . .	0	0	0	0	0	0	0	0	0	0		
Lithuania . . . . .	2	2	0	0	11	18	0	0	26	0		
Poland . . . . .	20	44	0	0	165	403	0	4	511	4		
Rumania . . . . .	0	22	0	0	9	794	0	0	855	0		
Yugoslavia . . . . .	2	2	0	0	42	55	0	0	104	0		
Canada . . . . .	653	661	0	2	5,966	6,338	15	24	10,551	40		
United States . . . . .	604	1,396	0	0	5,223	10,706	0	0	15,091	0		
Argentina . . . . .	97	106	—	—	633	924	—	—	1,545	—		
Chile . . . . .	—	—	—	—	4	4	55	2	29	0		
India . . . . .	11	73	0	0	229	534	2	0	836	0		
Turkey . . . . .	0	0	0	0	0	0	0	4	11	4		
Japan . . . . .	646	293	2	9	3,547	1,453	9	75	3,470	106		
Algeria . . . . .	31	11	4	2	276	64	33	44	157	57		
Tunis . . . . .	13	9	7	2	104	71	22	15	146	20		
Australia . . . . .	1,684	1,179	2	0	7,225	8,675	2	0	13,995	0		
<i>Importing Countries:</i>												
Austria . . . . .	0	0	40	71	0	7	379	653	7	1,261		
Denmark . . . . .	0	2	49	110	9	7	459	873	13	1,290		
Estonia . . . . .	0	0	0	0	0	9	0	13	11	15		
Irish Free State . . . . .	0	2	82	280	0	20	1,162	2,222	26	4,048		
Finland . . . . .	0	0	73	68	0	0	712	1,071	0	1,596		
Gr. Brit. and N. Irel. . . . .	295	417	650	955	2,639	3,038	4,912	6,945	5,628	11,224		
Greece . . . . .	0	0	0	2	0	0	15	51	0	66		
Norway . . . . .	0	0	79	157	2	7	606	981	11	1,358		
Netherlands . . . . .	0	15	79	42	18	55	525	483	71	723		
Portugal . . . . .	—	—	13	9	—	—	157	95	—	201		
Sweden . . . . .	0	0	0	2	0	0	7	24	0	37		
Czechoslovakia . . . . .	0	0	44	90	4	7	260	653	9	1,182		
Ceylon . . . . .	—	—	13	40	—	—	256	282	—	401		
Java and Madura . . . . .	—	—	—	—	—	—	516	633	—	1,138		
Indo-China . . . . .	—	—	42	35	—	—	212	238	—	388		
Syria and Lebanon . . . . .	13	4	64	33	62	82	362	187	93	397		
Egypt . . . . .	—	—	—	—	0	0	137	1,276	0	2,430		
Union of South Africa . . . . .	—	—	—	—	0	0	2	11	2	15		
New Zealand . . . . .	—	—	—	—	0	0	117	93	4	238		
<b>Totals . . . . .</b>	<b>4,920</b>	<b>4,916</b>	<b>1,296</b>	<b>1,981</b>	<b>32,405</b>	<b>40,393</b>	<b>11,472</b>	<b>17,462</b>	<b>63,238</b>	<b>29,068</b>		
<b>Barley. — Thousand centals (1 cental = 100 lb.).</b>												
<i>Exporting Countries:</i>												
Bulgaria . . . . .	0	0	0	0	60	395	0	0	406	0		
Spain . . . . .	11	0	0	0	26	4	0	0	15	0		
Hungary . . . . .	152	0	0	0	772	46	0	0	55	7		
Lithuania . . . . .	0	0	0	0	2	0	0	0	0	0		
Poland . . . . .	326	273	0	0	2,879	2,590	0	0	3,146	0		
Rumania . . . . .	157	196	0	0	8,814	13,208	0	0	15,913	0		
Czechoslovakia . . . . .	225	57	0	0	2,994	979	2	2	2,112	2		
U. S. S. R. . . . .	—	—	—	—	7,075	16,367	—	—	17,789	—		
Canada . . . . .	108	154	0	0	2,145	3,915	—	0	6,499	0		
United States . . . . .	126	46	—	—	2,789	1,435	—	—	2,524	—		
Argentina . . . . .	1,649	1,909	—	—	3,201	4,012	—	—	6,274	—		
Chile . . . . .	—	—	—	—	4	60	0	0	492	0		
India . . . . .	—	7	0	0	4	229	0	0	666	0		
Syria and Lebanon . . . . .	0	2	55	24	31	368	291	71	384	104		
Turkey . . . . .	77	298	0	0	611	2,242	0	0	2,996	0		
Egypt . . . . .	—	—	—	—	15	0	0	216	2	273		
Tunis . . . . .	137	2	2	40	2,207	123	31	527	820	556		
Australia . . . . .	474	456	0	0	785	1,129	0	0	1,614	0		
<i>Importing Countries:</i>												
Germany . . . . .	0	2	243	1,219	2	13	1,823	9,262	18	15,970		
Austria . . . . .	0	0	143	134	0	0	1,155	1,506	0	2,075		
Belgium . . . . .	143	168	553	805	992	1,001	6,091	6,682	1,676	9,396		
Denmark . . . . .	31	57	148	51	236	408	1,549	2,163	474	3,331		
Irish Free State . . . . .	0	4	0	68	2	26	9	300	26	483		
France . . . . .	0	2	0	0	0	11	5,783	6,089	15	9,482		
Gr. Brit. and N. Irel. . . . .	0	0	1,276	811	29	9	8,722	10,820	31	14,039		
Greece . . . . .	0	0	0	29	7	0	46	46	0	172		
Italy . . . . .	0	0	73	60	0	0	672	452	0	800		
Latvia . . . . .	0	0	0	0	0	0	0	4	0	4		
Norway . . . . .	0	0	0	99	0	0	88	580	0	794		
Netherlands . . . . .	22	37	487	677	46	176	5,439	6,186	262	9,112		
Switzerland . . . . .	0	0	434	139	0	0	3,223	1,964	2	2,989		
Yugoslavia . . . . .	2	0	2	0	22	13	4	33	13	37		
Algeria . . . . .	0	24	207	82	68	562	1,640	1,956	620	2,520		
<b>Totals . . . . .</b>	<b>3,640</b>	<b>3,692</b>	<b>4,079</b>	<b>5,021</b>	<b>35,811</b>	<b>49,330</b>	<b>36,329</b>	<b>48,859</b>	<b>64,844</b>	<b>72,146</b>		

COUNTRIES	FEBRUARY				SEVEN MONTHS (August 1-February 28)				TWELVE MONTHS August 1-July 31	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Oats. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . . .	0	4	0	9	15	53	9	161	73	218
Hungary . . . . .	22	0	0	0	57	4	0	2	7	2
Lithuania . . . . .	0	4	0	0	0	9	0	0	20	0
Poland . . . . .	68	4	0	0	119	22	0	0	62	0
Rumania . . . . .	7	0	0	0	624	212	0	0	293	0
Czechoslovakia . . .	143	51	0	2	2,346	351	0	55	884	57
Yugoslavia . . . . .	0	0	0	0	0	0	0	0	2	0
Canada . . . . .	280	388	55	0	2,765	2,533	575	536	4,628	655
United States . . . .	99	4	2	2	990	642	2	9	895	22
Argentina . . . . .	1,373	2,158	—	—	6,479	8,796	—	—	16,257	—
Chile . . . . .	—	—	—	—	101	106	0	0	223	0
Algeria . . . . .	11	68	2	11	112	194	31	311	273	384
Tunis . . . . .	2	7	0	0	86	132	0	0	212	0
Australia . . . . .	4	20	0	0	77	53	0	0	108	2
<i>Importing Countries:</i>										
Germany . . . . .	7	0	44	2	9	7	163	176	9	223
Austria . . . . .	0	0	9	108	0	0	509	844	0	1,464
Belgium . . . . .	0	4	117	130	7	7	373	650	37	1,504
Denmark . . . . .	4	13	40	0	60	57	93	284	60	500
Estonia . . . . .	0	0	0	0	0	0	0	7	0	7
Finland . . . . .	0	4	0	0	2	18	37	40	20	55
France . . . . .	0	0	62	143	4	4	891	798	7	3,214
Gr. Brit. and N. Irel.	4	68	644	573	13	106	3,435	4,603	203	8,494
Italy . . . . .	0	0	121	240	0	0	1,490	2,000	0	4,074
Latvia . . . . .	0	0	0	0	0	0	0	7	0	7
Norway . . . . .	0	0	0	73	0	0	11	203	2	273
Netherlands . . . . .	2	7	220	267	9	35	1,653	1,334	44	2,383
Sweden . . . . .	13	15	26	40	40	20	262	699	181	1,157
Switzerland . . . . .	0	0	401	278	0	0	2,694	2,626	2	5,033
<b>Totals . . .</b>	<b>2,039</b>	<b>2,819</b>	<b>1,743</b>	<b>1,878</b>	<b>13,915</b>	<b>13,361</b>	<b>12,228</b>	<b>15,345</b>	<b>24,508</b>	<b>29,728</b>
<b>Maize. — Thousand centals (1 cental = 100 lb.).</b>										
<b>FOUR MONTHS (November 1-February 28)</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	137	351	0	0	1,387	1,060	0	0	2,890	0
Rumania . . . . .	2,901	3,187	0	0	16,691	13,351	0	0	34,421	2
Yugoslavia . . . . .	525	165	0	2	3,763	886	0	20	1,825	26
United States . . . .	311	143	7	15	1,993	498	44	97	3,084	220
Argentina . . . . .	4,806	9,661	—	—	30,345	59,446	—	—	175,473	—
Brazil . . . . .	—	—	—	—	0	0	—	—	2	—
Java and Madura . . .	—	—	—	—	172	362	—	—	2,467	—
Indo-China . . . . .	141	29	—	—	1,768	1,257	—	—	3,459	—
Syria and Lebanon . .	0	0	18	0	4	7	46	7	7	37
Turkey . . . . .	22	24	0	0	51	62	0	0	373	0
Egypt . . . . .	—	—	—	—	22	0	0	13	15	46
Union of South Africa	437	0	0	0	2,414	1,411	0	0	4,991	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	472	1,587	0	0	3,228	4,799	0	17,007
Austria . . . . .	0	0	664	631	0	0	4,154	2,806	0	7,632
Belgium . . . . .	152	165	1,173	1,477	324	317	6,532	7,573	1,385	18,691
Denmark . . . . .	0	0	1,107	1,839	0	0	5,688	7,811	0	21,231
Spain . . . . .	0	0	106	1,283	0	0	655	2,306	0	6,931
Irish Free State . . .	0	0	470	642	0	0	1,733	3,942	0	13,658
Finland . . . . .	0	0	99	35	0	0	276	143	0	582
France . . . . .	0	2	1,784	2,284	0	7	7,289	8,821	26	25,869
Gr. Brit. and N. Irel.	154	181	4,616	5,307	534	919	19,765	27,382	3,208	64,058
Greece . . . . .	0	0	29	1,213	0	0	75	1,704	0	3,382
Hungary . . . . .	170	2	0	84	875	46	0	214	93	939
Italy . . . . .	0	0	254	1,382	2	2	774	4,451	7	15,737
Norway . . . . .	0	0	362	192	0	0	1,111	1,585	0	4,992
Netherlands . . . . .	7	11	2,476	3,025	35	51	14,315	16,114	223	36,897
Poland . . . . .	0	0	7	0	0	0	20	51	0	126
Portugal . . . . .	—	—	51	95	—	—	348	395	—	1,407
Sweden . . . . .	0	0	560	256	0	0	1,625	2,187	0	6,083
Switzerland . . . . .	0	0	187	284	0	0	582	1,453	2	3,717
Czechoslovakia . . .	0	0	126	1,250	0	0	432	5,364	0	9,958
Canada . . . . .	0	0	243	280	18	4	2,588	2,165	13	3,891
Japan . . . . .	—	—	0	176	—	—	2	712	—	1,695
Tunis . . . . .	0	0	0	35	0	0	0	203	0	324
<b>Totals . . .</b>	<b>10,263</b>	<b>12,921</b>	<b>14,811</b>	<b>23,374</b>	<b>60,398</b>	<b>79,686</b>	<b>71,286</b>	<b>102,318</b>	<b>233,964</b>	<b>264,238</b>

1) 2) See notes page 272.



COUNTRIES	FEBRUARY				TWO MONTHS (January 1-February 28)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Rice. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Spain . . . . .	15	90	0	0	22	148	0	0	871	0
Italy . . . . .	295	417	9	0	496	831	15	7	3,505	55
United States . . . . .	183	203	24	15	342	353	60	49	2,586	192
Brazil . . . . .	...	...	—	—	...	...	—	—	615	—
India . . . . .	3,957	5,454	77	2	5,549	9,297	150	45	48,001	683
Indo-China . . . . .	2,560	2,520	—	—	4,365	4,451	—	—	26,983	—
Siem . . . . .	3,208	2,588	—	—	6,473	5,115	—	—	34,106	—
Egypt . . . . .	...	...	...	...	...	...	...	...	1,032	710
<i>Importing Countries:</i>										
Germany . . . . .	75	77	401	602	119	161	1,005	1,021	1,047	8,481
Austria . . . . .	0	0	53	44	0	0	104	79	0	549
Belgium . . . . .	7	33	66	49	11	53	152	130	201	1,208
Denmark . . . . .	0	0	15	9	0	0	26	15	0	139
Estonia . . . . .	—	—	2	0	—	—	2	2	—	15
Irish Free State . . . . .	0	0	4	2	0	0	9	7	—	46
France . . . . .	97	79	933	450	183	141	1,506	893	864	8,327
Gr. Brit. and N. Irel. . . . .	7	15	95	238	18	35	150	355	163	2,747
Greece . . . . .	—	—	26	53	—	—	68	93	—	540
Hungary . . . . .	0	0	2	29	0	0	24	68	0	465
Latvia . . . . .	0	0	0	0	0	0	2	2	0	18
Lithuania . . . . .	0	0	0	2	0	0	2	2	0	20
Norway . . . . .	0	0	7	2	0	0	11	9	0	71
Netherlands . . . . .	101	170	106	57	203	282	306	110	1,863	2,784
Poland . . . . .	4	29	0	15	11	55	66	18	317	1,027
Portugal . . . . .	—	—	49	66	—	—	86	95	—	875
Sweden . . . . .	—	—	0	0	—	—	0	0	—	90
Switzerland . . . . .	0	0	35	24	0	0	68	84	0	432
Czechoslovakia . . . . .	0	0	97	49	0	0	123	146	0	1,096
Yugoslavia . . . . .	0	0	44	64	0	0	82	121	2	494
Canada . . . . .	0	0	22	26	0	0	53	66	9	593
Chile . . . . .	—	—	...	...	—	—	...	...	—	187
Ceylon . . . . .	0	0	825	1,109	0	0	1,667	2,119	4	10,386
Java and Madura . . . . .	...	...	...	...	2	2	379	351	73	3,303
Japan . . . . .	9	9	309	29	185	13	578	265	1,034	3,120
Syria and Lebanon . . . . .	0	0	35	22	0	0	68	55	0	392
Turkey . . . . .	0	0	7	4	0	0	9	9	0	93
Algeria . . . . .	2	0	35	13	4	0	57	29	9	198
Tunis . . . . .	0	0	2	11	0	0	4	15	0	40
Union of South Africa . . . . .	...	...	...	...	...	...	...	...	...	895
Australia . . . . .	4	9	2	2	7	22	13	7	86	49
New Zealand . . . . .	...	...	...	...	...	...	...	...	0	64
<b>Totals . . . . .</b>	<b>10,524</b>	<b>11,693</b>	<b>3,282</b>	<b>2,988</b>	<b>17,988</b>	<b>20,959</b>	<b>6,845</b>	<b>6,277</b>	<b>123,373</b>	<b>50,364</b>
<b>Linseed. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Estonia . . . . .	0	0	7	0	0	0	9	0	2	4
Lithuania . . . . .	7	31	0	0	13	60	0	0	170	0
Argentina . . . . .	3,783	4,740	—	—	8,087	8,935	—	—	44,403	—
India . . . . .	139	137	0	0	247	328	0	0	1,728	0
Tunis . . . . .	0	2	0	0	2	2	0	0	24	0
<i>Importing Countries:</i>										
Germany . . . . .	0	2	758	470	2	4	1,812	939	20	9,841
Belgium . . . . .	7	9	465	340	13	73	866	622	139	3,684
Denmark . . . . .	—	—	42	18	—	—	57	51	—	534
Spain . . . . .	—	—	40	22	—	—	42	35	—	534
Finland . . . . .	0	0	13	7	0	0	13	7	—	75
France . . . . .	0	0	412	278	0	2	763	536	7	5,187
Gr. Brit. and N. Irel. . . . .	0	0	697	877	2	0	944	1,248	4	8,294
Greece . . . . .	0	0	9	2	0	0	15	4	0	88
Hungary . . . . .	0	0	0	0	0	0	0	0	9	29
Italy . . . . .	0	0	139	121	0	0	271	216	0	1,512
Latvia . . . . .	7	4	7	2	24	15	9	4	53	75
Norway . . . . .	0	0	55	22	0	0	84	40	0	403
Netherlands . . . . .	4	7	1,005	529	9	55	1,810	1,543	75	9,912
Poland . . . . .	0	0	33	11	0	2	79	18	4	271
Sweden . . . . .	—	—	57	60	—	—	123	93	—	957
Czechoslovakia . . . . .	0	0	46	29	0	0	90	60	2	798
Yugoslavia . . . . .	0	0	0	0	0	0	11	0	0	115
Canada . . . . .	2	0	0	0	2	0	0	0	205	256
United States . . . . .	—	—	320	617	—	—	525	1,021	—	4,502
Japan . . . . .	—	—	33	24	—	—	66	57	—	148
Australia . . . . .	0	0	20	157	0	0	44	181	0	450
<b>Totals . . . . .</b>	<b>3,949</b>	<b>4,932</b>	<b>4,162</b>	<b>3,586</b>	<b>8,401</b>	<b>9,476</b>	<b>7,633</b>	<b>6,675</b>	<b>46,845</b>	<b>47,769</b>

COUNTRIES	FEBRUARY				TWO MONTHS (January 1-February 28)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Butter. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Austria . . . . .	35	84	0	22	359	183	2	24	1,565	802
Denmark . . . . .	23,993	26,156	7	128	48,140	55,263	57	289	347,886	922
Estonia . . . . .	754	994	0	0	1,532	2,132	0	0	27,626	0
Irish Free State . . . . .	278	289	0	840	787	500	2	1,045	36,932	2,632
Finland . . . . .	2,194	3,089	0	0	4,394	6,316	0	0	32,020	0
Hungary . . . . .	712	450	0	0	1,345	877	0	0	4,495	0
Latvia . . . . .	1,764	1,587	0	0	3,770	4,103	0	0	41,000	2
Lithuania . . . . .	567	496	0	0	1,131	970	0	0	21,883	0
Norway . . . . .	192	395	0	2	639	831	2	7	2,421	90
Netherlands . . . . .	4,224	1,881	128	3,541	8,424	4,220	161	6,301	44,926	9,323
Poland . . . . .	40	249	0	0	117	1,157	0	0	2,707	866
Sweden . . . . .	2,575	2,939	0	4	5,086	6,149	2	9	29,875	33
U. S. S. R. . . . .	—	—	—	—	—	—	—	—	68,198	—
Argentina . . . . .	3,655	6,764	—	—	9,506	14,207	—	—	55,973	—
India . . . . .	31	18	31	33	46	53	75	86	260	428
Syria and Lebanon . . . . .	13	15	146	148	55	79	256	249	315	1,867
Australia . . . . .	27,216	18,074	0	0	50,094	48,714	0	0	229,105	—
New Zealand . . . . .	15,426	33,473	—	—	45,949	47,911	—	—	244,787	—
<i>Importing Countries:</i>										
Germany . . . . .	0	11	7,306	12,368	0	15	14,542	31,321	478	153,264
Belgium . . . . .	20	130	3,836	6,969	35	198	7,637	12,361	1,841	46,778
Spain . . . . .	2	13	0	9	4	15	2	11	44	42
France . . . . .	412	498	5,362	2,546	871	1,321	11,548	2,646	7,921	26,140
Gr. Brit. and N. Irel . . . . .	990	8,748	70,180	81,527	1,790	17,269	153,652	161,180	35,693	946,298
Greece . . . . .	—	—	31	146	—	—	77	282	—	1,197
Italy . . . . .	112	60	562	1,038	141	90	825	1,942	827	3,812
Switzerland . . . . .	0	0	37	1,327	0	0	381	2,456	7	8,151
Czechoslovakia . . . . .	0	0	0	24	0	24	2	68	26	2,703
Canada . . . . .	29	146	487	44	68	258	573	62	3,505	238
United States . . . . .	101	108	93	139	196	251	194	262	1,607	1,014
Ceylon . . . . .	—	—	26	53	—	—	95	108	—	602
Java and Madura . . . . .	—	—	—	—	—	—	884	525	—	8,516
Japan . . . . .	—	—	13	13	—	—	20	33	—	163
Algeria . . . . .	2	4	269	328	4	11	613	774	35	3,955
Egypt . . . . .	—	—	—	—	—	—	—	—	384	825
Tunis . . . . .	0	0	146	99	2	0	291	192	4	1,305
<b>Totals</b>	<b>85,277</b>	<b>106,671</b>	<b>88,660</b>	<b>111,348</b>	<b>184,485</b>	<b>213,117</b>	<b>191,893</b>	<b>222,233</b>	<b>1,244,346</b>	<b>1,221,968</b>
<b>Cheese. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	229	62	0	0	492	203	0	0	2,601	4
Denmark . . . . .	1,713	950	7	11	3,190	1,894	15	42	14,535	130
Finland . . . . .	677	608	2	2	1,296	1,197	2	2	7,225	26
Italy . . . . .	3,605	6,393	578	668	7,249	10,452	1,093	1,082	66,399	8,805
Lithuania . . . . .	130	168	0	0	245	381	0	0	1,768	7
Norway . . . . .	311	351	15	26	628	670	26	46	3,644	240
Netherlands . . . . .	11,535	12,031	57	97	22,359	25,001	117	179	170,061	1,076
Poland . . . . .	2	128	37	49	15	346	71	79	767	586
Switzerland . . . . .	2,879	3,269	271	384	6,272	6,360	503	974	43,700	4,755
Czechoslovakia . . . . .	278	697	196	132	653	1,870	346	351	6,124	3,071
Yugoslavia . . . . .	119	134	4	20	220	408	13	33	2,617	150
Canada . . . . .	306	668	51	84	670	1,420	126	152	86,940	1,166
Australia . . . . .	1,715	836	2	2	3,461	2,209	7	2	8,803	60
New Zealand . . . . .	20,523	18,290	0	0	45,872	41,597	0	0	192,175	2
<i>Importing Countries:</i>										
Germany . . . . .	478	414	8,717	7,621	974	661	15,014	15,260	4,237	108,688
Austria . . . . .	324	9	132	337	688	75	337	604	3,982	3,732
Belgium . . . . .	29	51	3,241	3,278	71	99	7,070	6,978	553	45,660
Spain . . . . .	13	13	112	165	20	20	254	298	238	2,480
Irish Free State . . . . .	0	2	35	159	0	20	139	331	37	2,019
France . . . . .	1,980	2,612	4,438	5,415	4,306	5,529	7,994	7,551	29,211	52,267
Gr. Brit. and N. Irel . . . . .	518	677	25,882	26,224	1,078	1,259	53,958	53,434	7,242	336,733
Greece . . . . .	60	0	123	315	110	0	225	642	620	1,753
Hungary . . . . .	2	4	0	2	7	9	7	9	33	11
Portugal . . . . .	—	—	24	31	—	—	42	44	—	608
Sweden . . . . .	—	—	55	77	—	—	137	141	—	1,045
United States . . . . .	84	93	3,545	3,580	192	2,1	6,614	7,311	1,534	55,632
India . . . . .	0	0	71	62	0	0	154	91	2	939
Java and Madura . . . . .	—	—	—	—	—	—	108	99	—	1,642
Syria and Lebanon . . . . .	4	0	119	—	4	2	251	179	68	1,195
Algeria . . . . .	20	9	893	1,098	26	24	1,839	1,248	159	10,033
Egypt . . . . .	—	—	—	—	—	—	—	—	254	5,260
Tunis . . . . .	2	0	223	174	4	—	401	357	13	2,191
<b>Totals</b>	<b>47,536</b>	<b>48,469</b>	<b>48,830</b>	<b>50,101</b>	<b>100,102</b>	<b>101,977</b>	<b>96,863</b>	<b>97,569</b>	<b>655,542</b>	<b>651,966</b>

2) See notes page 272.

COUNTRIES	FEBRUARY				SEVEN MONTHS (August 1-February 28)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Cotton. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
United States . . .	3,003	5,201	77	46	30,210	31,758	375	240	46,787	620
Argentina . . . . .	0	4	—	—	284	258	—	—	584	—
Brazil . . . . .	—	—	—	—	2	174	—	—	183	—
India . . . . .	1,495	650	64	159	5,172	4,603	302	582	7,088	2,249
Egypt . . . . .	—	—	—	—	2,575	3,430	0	0	7,500	0
<i>Importing Countries:</i>										
Germany . . . . .	86	101	694	701	820	1,052	5,357	4,921	—	—
Austria . . . . .	0	0	35	49	0	0	243	348	1,640	8,327
Belgium . . . . .	—	31	218	108	150	223	1,199	933	0	553
Denmark . . . . .	—	—	9	11	—	—	77	73	348	1,349
Spain . . . . .	0	2	77	276	11	13	1,076	1,157	24	134
Estonia . . . . .	0	0	4	4	0	0	35	42	0	75
Finland . . . . .	0	0	9	15	0	0	108	95	0	159
France . . . . .	33	49	888	328	201	344	4,407	2,048	494	4,286
Gr. Brit. and N. Irel.	26	46	1,016	880	278	243	7,599	7,388	485	12,452
Greece . . . . .	0	0	18	15	0	0	93	123	0	192
Hungary . . . . .	0	0	44	37	0	0	236	201	0	333
Italy . . . . .	0	0	434	481	0	0	2,535	2,308	0	4,037
Latvia . . . . .	0	0	4	2	0	0	44	35	0	51
Norway . . . . .	0	0	7	2	0	0	35	26	0	44
Netherlands . . . . .	0	0	71	90	4	7	450	584	7	860
Poland . . . . .	2	2	79	62	13	15	714	633	22	1,074
Portugal . . . . .	—	—	44	35	—	—	262	225	—	434
Sweden . . . . .	—	—	33	44	—	—	324	346	—	564
Switzerland . . . . .	0	0	44	42	2	4	342	317	4	505
Czechoslovakia . . . . .	7	11	139	143	68	86	1,129	1,232	137	2,002
Yugoslavia . . . . .	0	0	20	20	0	0	112	128	0	201
Canada . . . . .	—	—	62	73	—	—	626	595	—	974
Japan . . . . .	49	79	2,019	1,971	302	470	8,488	7,822	1,041	16,484
Algeria . . . . .	0	0	0	0	2	2	2	4	4	7
<b>Totals . . . . .</b>	<b>4,719</b>	<b>6,167</b>	<b>6,109</b>	<b>5,594</b>	<b>40,094</b>	<b>42,682</b>	<b>36,170</b>	<b>32,406</b>	<b>66,348</b>	<b>60,283</b>

**Wool. — (Thousand lb.).**

COUNTRIES	FEBRUARY				SEVEN MONTHS (August 1-February 28)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wool. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . . .	772	448	66	68	6,649	6,080	434	445	9,949	948
Hungary . . . . .	132	4	128	90	1,508	1,166	670	763	2,344	1,270
Argentina . . . . .	38,255	36,654	—	—	164,906	127,399	—	—	249,304	—
Chile . . . . .	1,616	611	—	—	7,857	4,396	—	—	8,098	—
India . . . . .	—	—	—	—	858	992	—	—	24,441	—
Syria and Lebanon . . .	2,041	2,183	994	315	21,616	21,019	3,750	2,059	35,402	5,020
Algeria . . . . .	216	183	13	9	2,011	2,269	888	421	3,935	985
Egypt . . . . .	425	522	60	159	3,558	3,309	928	721	6,856	1,252
Un. of S. Africa . . .	45,078	52,508	—	—	183,187	156,247	2	0	298,044	0
Australia . . . . .	769	489	—	—	3,175	2,337	2,344	2	5,296	1,261
New Zealand . . . . .	101,775	82,473	3,038	500	573,715	517,129	3,441	1,162	762,756	2,008
<i>Importing Countries:</i>										
Germany . . . . .	5,551	3,472	20	—	35,761	30,386	24	7	58,535	15
Austria . . . . .	45,920	36,288	—	—	106,248	84,559	0	0	177,836	2
Belgium . . . . .	3,422	4,482	—	—	23,898	19,496	9	13	43,314	13
Denmark . . . . .	—	—	—	—	—	—	—	—	—	—
Spain . . . . .	—	—	—	—	—	—	—	—	—	—
Finland . . . . .	—	—	—	—	—	—	—	—	—	—
France . . . . .	185	340	32,754	35,217	1,788	8,578	149,915	98,254	9,780	241,555
Gr. Brit. and N. Irel.	836	703	3,441	3,684	4,381	6,100	18,481	15,902	9,681	31,656
Greece . . . . .	2	0	1,175	1,473	33	49	8,234	7,317	82	14,006
Italy . . . . .	8,294	571	18,847	8,208	51,216	5,591	96,968	47,942	18,715	116,938
Norway . . . . .	1,493	1,947	214	251	9,731	11,812	1,916	1,695	22,465	3,036
Netherlands . . . . .	20	18	414	421	128	108	2,624	2,348	157	4,409
Poland . . . . .	203	170	183	505	1,380	1,435	5,329	1,750	2,566	10,483
Sweden . . . . .	11	4	362	209	40	79	1,997	1,179	86	2,762
Switzerland . . . . .	2,685	2,906	64,646	37,324	18,093	26,361	280,030	162,137	45,631	393,116
Czechoslovakia . . . . .	40,402	30,060	102,381	88,580	204,382	131,883	444,923	396,364	315,628	888,010
Yugoslavia . . . . .	11	7	231	240	417	62	1,003	1,367	300	2,094
Canada . . . . .	57	123	16,779	20,014	198	853	67,687	62,149	1,232	145,076
United States . . . . .	441	95	1,202	1,418	1,953	1,065	7,654	8,541	1,232	14,290
Japan . . . . .	66	40	152	238	395	423	1,052	1,213	756	2,355
Tunis . . . . .	247	143	794	1,133	1,272	1,146	4,292	3,594	1,933	7,229
<b>Totals . . . . .</b>	<b>301,777</b>	<b>257,782</b>	<b>289,480</b>	<b>242,411</b>	<b>1,436,844</b>	<b>1,180,794</b>	<b>1,303,317</b>	<b>1,026,439</b>	<b>2,132,345</b>	<b>2,280,315</b>

COUNTRIES	FEBRUARY		EIGHT MONTHS (July 1-Feb. 28)		TWELVE MONTHS (July 1-June 30)	COUNTRIES	FEBRUARY		EIGHT MONTHS (July 1-Feb. 28)		TWELVE MONTHS (July 1-June 30)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32
<b>Coffee. — (Thousand lb.).</b>						<b>Tea. — (Thousand lb.).</b>					
<b>EXPORTS.</b>						<b>EXPORTS</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	2) 649,749	1,092,615	2,022,263	Ceylon . . . . .	17,430	17,816	148,607	144,866	245,982
India . . . . .	2,110	4,696	6,609	7,831	17,926	India . . . . .	19,035	15,357	325,262	304,157	342,946
Java and Madura .	...	...	1) 69,426	31,694	51,725	Java and Madura .	...	...	1) 88,134	94,554	163,312
						Japan . . . . .	13	3,159	21,841	20,126	24,590
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	73	55	1,005	1,345	1,649	Belgium . . . . .	0	4	7	18	22
Belgium . . . . .	18	1,396	324	8,289	9,643	Irish Free State .	2	33	20	181	258
France . . . . .	2	0	60	11	15	France . . . . .	0	2	11	29	35
Netherlands . . . .	917	1,806	11,949	9,414	14,709	Gr. Britain and N. Irel.	7,443	5,844	57,693	59,567	77,887
Portugal . . . . .	236	86	1,354	690	1,270	Netherlands . . . .	15	22	86	104	141
Switzerland . . . .	15	64	234	481	613	United States . . .	64	33	231	342	474
Canada . . . . .	2	2	31	29	42	Syria and Lebanon .	0	0	0	4	20
United States . . . .	681	1,316	8,561	10,536	22,593	Algeria . . . . .	4	0	24	31	49
Ceylon . . . . .	0	0	2	9	11	Union of S. Africa .	...	...	2) 7	22	121
Syria and Lebanon .	0	2	7	7	46	Australia . . . . .	0	35	421	403	549
Australia . . . . .	4	2	33	37	55	New Zealand . . . .	...	...	2) 53	37	148
<b>Totals . . . . .</b>	—	—	—	—	2,142,560	<b>Totals . . . . .</b>	44,006	42,305	642,397	624,441	856,534
<b>IMPORTS</b>						<b>IMPORTS</b>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	19,749	31,476	182,118	219,610	307,608	Germany . . . . .	664	948	6,936	7,319	10,494
Austria . . . . .	915	1,528	9,489	11,208	17,478	Austria . . . . .	64	79	657	807	1,131
Belgium . . . . .	4,381	14,866	70,784	94,495	114,762	Belgium . . . . .	42	101	425	443	661
Bulgaria . . . . .	106	183	514	985	1,658	Denmark . . . . .	126	108	875	893	1,380
Denmark . . . . .	4,112	7,059	28,069	45,389	66,439	Spain . . . . .	20	37	174	203	322
Spain . . . . .	3,746	5,990	28,413	33,325	53,903	Estonia . . . . .	2	11	49	115	172
Estonia . . . . .	29	26	55	185	298	Irish Free State .	1,777	2,006	14,795	17,313	25,122
Irish Free State . .	7	33	267	265	522	Finland . . . . .	24	20	150	194	249
Finland . . . . .	2,529	1,790	21,405	22,529	32,481	France . . . . .	406	300	2,141	2,253	3,419
France . . . . .	38,257	32,285	284,426	277,049	427,557	Gr. Britain and N. I.	38,482	43,094	434,281	426,122	550,364
Gr. Britain and N. I.						Ireland . . . . .	11	49	276	478	699
Ireland . . . . .	2,595	3,018	23,711	24,507	37,514	Greece . . . . .	35	29	489	461	562
Greece . . . . .	553	888	5,370	9,515	13,010	Hungary . . . . .	22	26	174	218	333
Hungary . . . . .	392	448	4,839	4,151	6,041	Italy . . . . .	4	7	77	104	128
Italy . . . . .	6,632	7,419	56,952	62,109	93,366	Latvia . . . . .	15	4	73	84	119
Latvia . . . . .	46	49	192	313	375	Lithuania . . . . .	29	40	260	280	386
Lithuania . . . . .	24	7	245	403	445	Norway . . . . .	1,312	2,599	22,884	20,238	30,836
Norway . . . . .	3,613	2,491	22,639	25,133	38,189	Poland . . . . .	328	265	2,544	3,236	4,317
Netherlands . . . .	6,665	6,944	69,034	73,591	103,379	Portugal . . . . .	42	62	269	428	648
Poland . . . . .	1,296	595	10,046	13,669	17,185	Sweden . . . . .	75	66	549	620	858
Portugal . . . . .	1,164	1,230	7,154	7,813	10,657	Switzerland . . . .	108	176	1,702	1,186	1,792
Sweden . . . . .	7,319	4,348	59,496	83,575	107,586	Czechoslovakia . .	29	93	1,199	1,369	1,737
Switzerland . . . .	1,133	2,983	29,516	21,940	34,286	Yugoslavia . . . .	31	33	342	496	622
Czechoslovakia . .	935	2,346	18,777	21,343	32,386	Canada . . . . .	6,713	9,010	25,488	26,555	39,031
Yugoslavia . . . .	1,082	1,484	9,147	11,925	17,434	United States . . .	5,706	6,393	67,967	67,378	90,460
Canada . . . . .	247	2,989	17,086	19,467	31,963	Chile . . . . .	...	...	1) 1,900	2) 2,826	5,172
United States . . . .	143,008	151,634	904,718	1,081,512	1,629,014	Syria and Lebanon .	18	31	172	430	586
Chile . . . . .	...	...	2) 3,349	5,313	9,308	Turkey . . . . .	154	0	1,539	950	1,504
Ceylon . . . . .	115	562	1,931	3,274	3,572	Algeria . . . . .	302	154	2,659	1,702	10,421
Japan . . . . .	386	602	2,549	3,572	6,724	Egypt . . . . .	...	...	2) 10,260	2) 7,668	13,999
Syria and Lebanon .	97	95	1,435	1,541	2,324	Tunis . . . . .	236	216	1,759	5,756	6,669
Turkey . . . . .	895	384	7,831	5,882	8,841	Union of S. Africa .	...	...	2) 5,642	2) 7,897	12,683
Algeria . . . . .	2,348	2,083	20,604	19,421	30,532	Australia . . . . .	2,943	3,984	33,391	29,893	44,899
Egypt . . . . .	...	...	2) 7,959	7,679	15,862	New Zealand . . . .	...	...	2) 5,558	2) 5,415	2,522
Tunis . . . . .	304	97	2,361	2,000	3,190						
Un. of S. Africa . .	...	...	2) 14,352	15,704	26,026						
Australia . . . . .	249	115	1,717	1,907	3,510						
New Zealand . . . .	...	...	2) 152	236	452						
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
India . . . . .	0	0	110	60	106	India . . . . .	309	271	4,685	5,246	6,486
						Java and Madura .	...	...	1) 3,924	1) 7,101	9,771
<b>Totals . . . . .</b>	254,853	290,047	1,928,812	2,232,595	3,305,983	<b>Totals . . . . .</b>	60,029	70,212	656,265	651,727	880,554

1) 2) See notes page 272.

COUNTRIES	FEBRUARY		FIVE MONTHS (Oct. 1-Feb. 28)		TWELVE MONTHS (Oct. 1-Sept. 30)	COUNTRIES	FEBRUARY		SEVEN MONTHS (August 1-Febr. 28)		TWELVE MONTHS (August 1-July 31)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32
<b>Cacao. — (Thousand lb.).</b>						<b>Total Wheat and Flour *)</b>					
<b>EXPORTS.</b>						<b>a) NET EXPORTS.</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Grenada . . . . .	...	...	3) 642	3) 562	9,658	Germany . . . . .	291	4) 2,198	4) 4,605	4) 6,691	
Dominican Republ. . . . .	...	...	1) 8,819	1) 6,621	35,975	Bulgaria . . . . .	7	763	1,239	4,605	6,691
Brazil . . . . .	...	...	2) 84,863	2) 67,883	197,978	Spain . . . . .	0	0	7	4) 4) 4)	
Ecuador . . . . .	...	...	2) 2,646	2) 3,527	37,765	Hungary . . . . .	306	181	2,718	8,638	10,752
Trinidad . . . . .	...	...	3) 2,908	3) 3,986	39,617	Lithuania . . . . .	2	9	15	33	55
Venezuela . . . . .	...	...	...	...	36,019	Poland . . . . .	68	214	4) 633	1,929	
Ceylon . . . . .	853	1,261	5,086	5,426	9,266	Rumania . . . . .	0	351	29	20,611	22,335
Java and Madura . . . . .	...	...	1) 1,129	1) 1,019	3,366	U. S. S. R. . . . .	...	...	1) 6) 9,178	1) 6) 38,757	6) 37,909
Cameroon . . . . .	...	...	2) 12,207	2) 9,123	27,315	Yugoslavia . . . . .	2	181	553	6,914	8,935
Ivory Coast . . . . .	...	...	2) 10,097	2) 7,848	54,578	Canada . . . . .	7,423	6,817	107,522	76,979	123,625
Gold Coast . . . . .	46,059	90,615	311,208	320,670	462,878	United States . . . . .	974	4,184	14,943	42,545	65,566
Nigeria . . . . .	...	...	1) 90,401	1) 51,683	123,929	Argentina . . . . .	9,983	12,227	32,653	40,867	83,525
St. Thomas and Prince Is. . . . .	...	...	2) 7,240	2) 10,000	25,867	Chile . . . . .	...	...	2) 11	46	
Togoland . . . . .	...	...	2) 3,527	2) 5,681	13,916	India . . . . .	4) 101	4) 694	1,118		
<i>Importing Countries:</i>						Syria and Lebanon . . . . .	4) 4) 4)	4) 269	4) 922		
Germany . . . . .	0	99	20	459	496	Turkey . . . . .	22	128	79	476	922
Belgium . . . . .	31	24	459	357	1,508	Algeria . . . . .	31	397	3,353	1,321	3,508
France . . . . .	0	0	60	2	4	Tunis . . . . .	106	18	2,238	1,398	5,104
Netherlands . . . . .	185	157	1,453	3,721	6,740	Australia . . . . .	16,277	12,551	52,254	49,183	92,453
United States . . . . .	924	604	4,720	3,508	7,011	<b>Totals . . . . .</b>	<b>35,492</b>	<b>38,122</b>	<b>228,979</b>	<b>293,934</b>	<b>464,473</b>
Australia . . . . .	0	0	2	119	143						
<b>Totals . . . . .</b>	<b>—</b>	<b>—</b>			<b>1,094,029</b>						
<b>IMPORTS</b>						<b>b) NET IMPORTS.</b>					
<i>Importing Countries</i>						<i>Importing Countries</i>					
Germany . . . . .	15,505	23,521	74,307	93,553	175,744	Germany . . . . .	5) 1,448	5) 3,977	3,422	13,913	
Austria . . . . .	1,171	1,047	3,549	5,686	13,651	Austria . . . . .	595	414	4,934	8,113	
Belgium . . . . .	1,929	2,319	7,467	9,866	21,588	Belgium . . . . .	1,400	1,508	13,371	15,494	27,862
Bulgaria . . . . .	49	218	231	578	1,323	Denmark . . . . .	659	481	4,718	7,335	10,412
Denmark . . . . .	939	908	2,972	3,230	7,756	Spain . . . . .	0	0	5) 18	6,457	
Spain . . . . .	2,934	1,512	9,464	7,851	21,892	Estonia . . . . .	0	13	0	170	262
Estonia . . . . .	20	46	97	348	452	Irish Free State . . . . .	758	741	5,855	6,612	11,715
Irish Free State . . . . .	97	31	1,131	472	1,149	Finland . . . . .	130	101	1,484	1,676	2,555
Finland . . . . .	22	13	97	97	181	France . . . . .	331	1,989	12,979	19,914	47,137
France . . . . .	8,331	6,594	42,823	38,217	91,214	Gr. Brit. and N. Irel. . . . .	8,984	10,218	69,878	89,005	143,918
Gr. Brit. and N. Irel. . . . .	13,872	14,872	67,823	61,097	138,407	Greece . . . . .	745	1,250	6,729	8,195	14,204
Greece . . . . .	243	622	1,175	1,742	2,844	Italy . . . . .	853	1,360	3,563	4,337	19,930
Hungary . . . . .	952	245	2,650	2,870	5,573	Latvia . . . . .	0	44	13	311	575
Italy . . . . .	1,276	1,074	7,039	6,601	15,053	Norway . . . . .	366	608	2,754	3,472	5,090
Latvia . . . . .	97	216	414	836	1,607	Netherlands . . . . .	1,173	1,418	9,641	11,420	18,680
Lithuania . . . . .	24	22	251	260	615	Poland . . . . .	5) 5) 5) 5) 5)	5) 5) 5) 5) 5)	5) 5) 5) 5) 5)	5) 5) 5) 5) 5)	5) 5) 5) 5) 5)
Norway . . . . .	421	463	1,695	2,842	5,033	Portugal . . . . .	37	18	492	604	1,660
Netherlands . . . . .	10,893	12,289	47,699	48,129	92,202	Sweden . . . . .	57	227	1,470	2,211	4,096
Poland . . . . .	922	915	5,542	5,071	11,444	Switzerland . . . . .	6) 741	6) 578	6) 6,923	6) 8,087	9) 12,666
Portugal . . . . .	86	121	432	470	855	Czechoslovakia . . . . .	448	906	1,704	9,061	14,758
Sweden . . . . .	948	877	3,871	5,593	10,481	Chile . . . . .	...	...	366	5) 381	5) 542
Switzerland . . . . .	2,515	1,856	6,874	4,359	11,197	Ceylon . . . . .	18	53	346	5) 181	5) 518
Czechoslovakia . . . . .	1,515	1,865	8,142	6,984	21,526	India . . . . .	337	5) 46	282	317	518
Yugoslavia . . . . .	15	68	346	511	1,501	Indo-China . . . . .	419	1,958	10,091	6,230	12,584
Canada . . . . .	1,603	1,929	7,895	6,660	16,444	Java and Madura . . . . .	...	...	1) 688	1) 844	1,517
United States . . . . .	51,192	63,601	240,307	176,313	420,143	Syria and Lebanon . . . . .	68	46	236	5) 223	
Japan . . . . .	90	163	1,063	675	1,960	Egypt . . . . .	...	...	2) 181	2) 1,876	4,231
Australia . . . . .	3,684	584	6,506	5,611	11,252	Union of S. Africa . . . . .	...	...	2) 139	2) 529	1,049
New Zealand . . . . .	...	...	348	545	1,554	New Zealand . . . . .	...	...	2) 719	2) 174	569
<b>Totals . . . . .</b>	<b>121,345</b>	<b>139,991</b>	<b>552,210</b>	<b>496,867</b>	<b>1,104,641</b>	<b>Totals . . . . .</b>	<b>18,174</b>	<b>25,425</b>	<b>149,674</b>	<b>206,629</b>	<b>385,236</b>

\*) Flour reduced to grain on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 31 January. — 2) Data up to 31 December. — 3) Data up to 30 November. — 4) See Net Imports. — 5) See Net Exports. — 6) Wheat only.

# STOCKS

## TOTAL STOCKS OF HOME GROWN PRODUCTS IN CANADA.

PRODUCTS AND LOCATION	Last day of the month					Last day of the month				
	March 1933	July 1932	March 1932	July 1931	March 1931	March 1933	July 1932	March 1932	July 1931	March 1931
	1,000 centals					1,000 bushels				
<b>WHEAT:</b>										
in farmers' hands .	48,022	4,498	35,191	11,675	56,353	80,037	7,496	58,651	19,459	93,922
in other positions 1)	139,669	74,073	110,789	68,772	111,704	232,782	123,453	184,649	114,620	186,173
TOTAL . . .	187,691	78,571	145,980	80,447	168,057	312,819	130,949	243,300	134,079	280,095
<b>RYE:</b>										
in farmers' hands .	1,148	82	539	786	4,093	2,050	146	962	1,404	7,309
in other positions 1)	2,778	2,932	6,242	7,298	7,534	4,960	5,235	11,148	13,032	13,454
TOTAL . . .	3,926	3,014	6,781	8,084	11,627	7,010	5,381	12,110	14,436	20,763
<b>BARLEY:</b>										
in farmers' hands .	10,861	1,669	8,955	8,457	27,380	22,626	3,477	18,656	17,618	57,042
in other positions 1)	3,441	1,769	4,823	5,685	13,225	7,168	3,685	10,047	11,844	27,553
TOTAL . . .	14,302	3,438	13,778	14,142	40,605	29,794	7,162	28,703	29,462	84,595
<b>OATS 2):</b>										
in farmers' hands .	49,479	7,760	39,583	17,885	65,315	154,621	24,249	123,697	55,892	204,110
in other positions 1)	4,747	2,431	5,946	3,682	6,159	14,835	7,596	18,580	11,505	19,248
TOTAL . . .	54,226	10,191	45,529	21,567	71,474	169,456	31,845	142,277	67,397	223,358
<b>LINSEED:</b>										
in farmers' hands .	199	4	182	20	343	355	7	325	36	612
in other positions 1)	783	737	800	447	1,223	1,399	1,314	1,429	798	2,185
TOTAL . . .	982	741	982	467	1,566	1,754	1,321	1,754	834	2,797
<b>POTATOES:</b>										
in farmers' hands	11,880	—	21,935	—	18,280	19,800	—	36,558	—	30,467

1) Under this designation are given stocks in country-, interior terminal- and port elevators, as well as those in mills and in transit (for details regarding wheat, see "Intern. Yearbook of Agric. Statistics, 1931-32", table 167, page 558). — 2) Bushels of 32 lbs.

## STOCKS OF WHEAT, OATS AND MAIZE IN FARMERS' HANDS IN THE UNITED STATES.

PRODUCTS	First day of the month					First day of the month				
	April 1933	April 1932	March 1932	April 1931	March 1931	April 1933	April 1932	March 1932	April 1931	March 1931
	1,000 centals					1,000 bushels				
Wheat . . . . .	107,004	100,000	124,394	69,404	96,865	178,340	166,000	207,323	115,673	161,442
Oats . . . . .	149,455	116,000	119,084	—	137,477	467,048	363,000	372,136	—	429,616
Maize . . . . .	630,907	519,000	618,067	—	393,976	1,126,620	927,000	1,103,691	—	703,529

## COMMERCIAL CEREALS IN STORE IN CANADA AND THE UNITED STATES.

SPECIFICATION	Friday or Saturday nearest to 1st of month					Friday or Saturday nearest to 1st of month				
	April 1933	March 1933	Feb. 1933	April 1932	April 1931	April 1933	March 1933	Feb. 1933	April 1932	April 1931
	1,000 centals					1,000 bushels				
<b>WHEAT:</b>										
Canadian in Canada . . . .	135,317	134,121	137,512	103,734	101,645	225,529	223,535	229,187	172,890	169,407
U. S. in Canada . . . . .	3,842	3,932	4,076	15,347	3,152	6,403	6,354	6,793	25,378	5,254
U. S. in the United States .	81,331	88,279	94,819	124,329	128,150	135,552	147,132	158,031	207,215	213,583
Canad. in the United States.	3,595	4,675	6,685	6,856	6,932	5,992	7,792	11,142	11,426	11,554
Total . . . . .	224,085	231,007	243,092	250,266	239,879	373,476	385,013	405,153	417,109	399,798
<b>RYE:</b>										
Canadian in Canada . . . .	2,873	2,860	2,811	6,103	7,409	5,131	5,108	5,020	10,899	13,230
U. S. in Canada . . . . .	55	55	55	140	1,186	99	99	99	250	2,119
U. S. in the United States .	4,305	4,353	4,443	5,669	7,226	7,688	7,774	7,934	10,124	12,903
Canad. in the United States	304	305	305	913	193	543	545	545	1,631	344
Total . . . . .	7,537	7,573	7,614	12,825	16,014	13,461	13,526	13,598	22,904	28,596
<b>BARLEY:</b>										
Canadian in Canada . . . .	3,265	3,206	3,267	4,628	12,863	6,802	6,679	6,806	9,642	26,798
U. S. in Canada . . . . .	10	10	10	12	127	21	21	21	25	264
U. S. in the United States .	4,727	4,858	5,048	2,006	4,543	9,848	10,121	10,516	4,179	9,464
Canad. in the United States .	0	0	0	710	362	0	0	0	1,479	754
Total . . . . .	8,002	8,074	8,325	7,356	17,895	16,671	16,821	17,343	15,325	37,280
<b>OATS: (1)</b>										
Canadian in Canada . . . .	4,132	3,321	3,177	5,093	5,058	12,911	10,377	9,929	15,917	15,807
U. S. in Canada . . . . .	54	133	253	0	213	168	416	790	0	665
U. S. in the United States .	7,742	8,266	8,357	5,055	5,828	24,195	25,831	26,116	15,796	18,213
Canad. in the United States .	0	0	0	0	3	0	0	0	1	10
Total . . . . .	11,928	11,720	11,787	10,148	11,102	37,274	36,624	36,835	31,714	34,695
<b>MAIZE:</b>										
U. S. in Canada . . . . .	875	1,244	1,743	0	212	1,562	2,221	3,113	0	378
Of other origin in Canada .	916	997	1,048	808	336	1,635	1,780	1,872	1,443	600
U. S. in the United States .	20,245	20,646	18,843	12,708	12,413	36,151	36,868	33,648	22,693	22,167
Total . . . . .	22,036	22,887	21,634	13,516	12,961	39,348	40,869	38,633	24,136	23,145

1) For oats the bushel is of 32 lbs.

## QUANTITIES OF CEREALS ON OCEAN PASSAGE WITH FIRST DESTINATION FOR EUROPE.

PRODUCTS	Saturday nearest to 1st of month					Saturday nearest to 1st of month				
	April 1933	March 1933	Feb. 1933	April 1932	April 1931	April 1933	March 1933	Feb. 1933	April 1932	April 1931
	1,000 centals					1,000 bushels				
Wheat (and flour in terms of wheat) .	31,435	36,230	29,347	35,203	28,814	52,392	60,384	48,912	58,672	48,024
Rye . . . . .	614	576	115	3,571	158	1,097	1,029	206	6,377	283
Barley . . . . .	2,272	2,828	2,012	3,200	3,704	4,733	5,892	4,192	6,677	7,717
Oats . . . . .	1,843	1,354	1,632	2,336	912	5,760	4,230	5,100	7,300	2,850
Maize . . . . .	7,978	9,615	11,150	12,062	9,365	14,246	17,169	19,911	21,540	16,723

Authority: Broomhall's Corn Trade News.

## STOCKS (TOTAL AND QUANTITIES FOR SALE) IN FARMERS' HANDS IN GERMANY.

PRODUCTS	% Total stocks : total production				% Quantities intended for sale : total production			
	15 March 1933	15 Feb. 1933	15 March 1932	15 March 1931	15 March 1933	15 Feb. 1933	15 March 1932	15 March 1931
Winter wheat . . . . .	26.9	35.8	15.5	13.2	21.5	29.9	11.3	8.6
Spring wheat . . . . .	44.8	57.5	36.6	30.3	33.8	47.1	26.3	17.8
Winter rye . . . . .	27.4	35.2	18.6	25.8	13.6	18.6	6.1	11.5
Winter barley . . . . .	12.0	16.5	10.8	11.4	1.7	2.7	1.3	1.6
Spring barley . . . . .	21.4	32.4	21.5	16.4	6.5	15.1	8.1	3.9
Oats . . . . .	44.9	54.3	41.0	44.8	9.0	12.9	7.8	9.7
Potatoes . . . . .	54.9	42.4	33.3	32.8	10.3	13.4	9.9	8.8

Authority: Preisberichtstelle beim Deutschen Landwirtschaftsrat.

## STOCKS OF CEREALS IN COMMERCIAL ELEVATORS AND MILLS IN GERMANY 1).

PRODUCTS	Last day of the month				Last day of the month			
	March 1933	February 1933	January 1933	March 1932	March 1933	February 1933	January 1933	March 1932
	1,000 centals				1,000 bushels or barrels			
WHEAT:								
Grain . . . . .	15,245	14,886	15,170	11,208	25,408	24,809	25,283	18,680
Flour for bread . . . .	3,089	3,009	3,095	2,870	1,576	1,535	1,579	1,465
TOTAL 2) . . . . .	19,363	18,898	19,297	15,035	32,272	31,495	32,160	25,061
RYE:								
Grain . . . . .	13,761	13,276	13,285	8,236	24,574	23,708	23,723	14,708
Flour for bread . . . .	1,605	1,552	1,579	1,228	819	792	805	627
TOTAL 2) . . . . .	15,902	15,346	15,390	9,873	28,396	27,404	27,480	17,634
BARLEY . . . . .	2,447	3,018	3,629	2,837	5,098	6,288	7,560	5,911
OATS . . . . .	2,266	2,253	2,209	2,218	7,082	7,041	6,903	6,931

1) See note under the corresponding table in the Bulletin for March, 1932 on page 218. — 2) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain (1,000 barrels of flour = 4,355.55 bushels of wheat or 4,584.80 bushels of rye).

## STOCKS IN FARMERS' HANDS IN ENGLAND AND WALES

PRODUCTS	% Stocks: total production				Estimated stocks in absolute figures							
	1 April 1933	1 Jan 1933	1 April 1932	1 April 1931	1 April 1933	1 Jan. 1933	1 April 1932	1 April 1931	1 April 1933	1 Jan 1933	1 April 1932	1 April 1931
	1,000 centals				1,000 bushels 1)							
Wheat . . . . .	13	41	21	19	3,248	10,058	4,525	4,502	5,413	16,763	7,541	7,504
Barley . . . . .	14	41	12	12	2,397	7,078	3,038	2,016	4,993	14,747	4,247	4,200
Oats . . . . .	19	55	20	21	5,354	15,389	5,533	6,294	16,730	48,090	17,290	19,670
Potatoes . . . . .	18	49	11	15	13,597	36,490	5,869	9,318	22,661	60,816	9,781	15,531
Hay . . . . .	28	70	32	25	42,650	107,162	56,045	43,658	2,132	5,358	2,802	2,183
Straw . . . . .	26	65	26	21	22,019	54,410	21,616	17,920	1,101	2,720	1,081	896

1) For hay and straw thousand short tons.



## GRAIN AND FLOUR STOCKS AT THE PORTS OF GREAT BRITAIN AND IRELAND 1).

PRODUCTS	First of the month					First of the month				
	April 1933	March 1933	Feb. 1933	April 1932	April 1931	April 1933	March 1933	Feb. 1933	April 1932	April 1931
	1,000 centals					1,000 bushels				
WHEAT:										
Grain . . . . .	5,400	3,384	3,576	8,376	6,960	9,000	5,640	5,960	13,960	11,600
Flour as grain . .	624	456	600	840	576	1,040	760	1,000	1,400	960
TOTAL . . . . .	6,024	3,840	4,176	9,216	7,536	10,040	6,400	6,960	15,360	12,560
Barley . . . . .	820	720	540	900	1,100	1,708	1,500	1,125	1,875	2,292
Oats . . . . .	448	288	320	448	1,724	1,400	900	1,000	1,400	3,200
Maize . . . . .	2,232	2,496	2,832	4,560	1,728	3,986	4,457	5,057	8,143	3,086

1) Imported cereals.

Authority: *Broomhall's Corn Trade News*.

## STOCKS OF COTTON ON HAND IN THE UNITED-STATES.

LOCATION	Last day of the month					Last day of the month				
	March 1933	Feb. 1933	Jan. 1933	March 1932	March 1931	March 1933	Feb. 1933	Jan. 1933	March 1932	March 1931
	1,000 centals					1,000 bales (counting round as half bales)				
In consuming establishments . . . .	6,600	7,088	7,349	7,698	7,154	1,343	1,442	1,495	1,566	1,478
In public storage and at compresses . .	43,811	46,144	49,298	43,131	32,248	8,906	9,380	10,021	8,767	6,658
TOTAL . . . . .	50,411	53,232	56,647	50,829	39,402	10,249	10,822	11,516	10,333	8,136

## STOCKS OF COTTON IN EUROPE.

COUNTRIES, PORTS, DESCRIPTIONS	Thursday or Friday nearest to 1st of month					Thursday or Friday nearest to 1st of month				
	April 1933	March 1933	Feb. 1933	April 1932	April 1931	April 1933	March 1933	Feb. 1933	April 1932	April 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs.)				
Great Britain:										
American . . . . .	2,451	2,436	2,423	2,129	2,593	513	510	507	445	543
Argentine, Brazilian, etc. . . . .	106	122	138	63	212	22	26	29	13	44
Peruvian, etc. . . .	209	241	267	173	286	44	50	56	36	60
East Indian, etc. . .	283	300	292	505	864	59	63	61	105	181
Egyptian, Sudanese . . . . .	1,302	1,296	1,298	1,625	1,479	272	271	272	340	309
Other 1) . . . . .	89	83	93	120	241	19	17	19	25	50
TOTAL . . . . .	4,440	4,478	4,511	4,615	5,675	929	937	944	965	1,187
Bremen:										
American . . . . .	2,601	2,544	2,252	1,527	2,506	544	532	471	319	524
Other . . . . .	79	97	122	33	36	17	21	25	7	8
TOTAL . . . . .	2,680	2,641	2,373	1,560	2,542	561	553	496	326	532
Le Havre:										
American . . . . .	1,255	1,307	1,382	812	1,691	262	273	289	170	354
Other . . . . .	31	37	43	55	155	7	8	9	11	32
TOTAL . . . . .	1,286	1,344	1,425	867	1,846	269	281	298	181	386
Total Continent 2):										
American . . . . .	4,769	4,740	4,417	3,238	4,808	998	992	924	677	1,006
Argentine, Brazilian, etc. . . . .	13	16	20	26	90	3	3	4	5	19
E. Indian, Australian, etc. . . . .	157	144	176	91	219	33	30	37	19	46
Egyptian . . . . .	117	139	125	154	102	24	29	26	32	21
W. Indian, W. African, E. African, etc. . . . .	31	42	33	21	52	6	9	7	5	11
TOTAL . . . . .	5,087	5,081	4,771	3,530	5,271	1,064	1,163	998	738	1,103

1) Includes: W. Indian, etc., E. African, etc.; W. African, and Australian. — 2) Includes Bremen, Le Havre, and other Continental ports.  
Authority: *Liverpool Cotton Ass.*

# STOCKS OF COTTON AT BOMBAY AND AT ALEXANDRIA.

PORTS	Thursday nearest to 1st of month					Thursday nearest to 1st of month				
	April 1933	March 1933	Feb. 1933	April 1932	April 1931	April 1933	March 1933	Feb. 1933	April 1932	April 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs)				
Bombay 1) . . . .	3,152	2,596	2,524	2,524	3,693	659	543	528	528	773
Alexandria . . . .	3,778	3,961	4,119	4,842	5,081	790	829	862	1,013	1,063

1) Stocks held by exporters, dealers and mills.

Authorities: East Indian Cotton Ass. and Commission de la Bourse de Minet-el-Bassal.

## IMPORT DUTIES ON CEREALS AND FLOUR

CHANGES TO BE MADE IN THE DUTIES PUBLISHED ON PAGES 160 TO 163 OF THE CROP REPORT FOR FEBRUARY 1932  
(SEE ALSO THE SAME HEADING IN THE CROP REPORTS FOR 1932 AND 1933).

COUNTRY	PRODUCT	Date when enforced	Original data per metric quintal	Data in Amer. cents per bushel or barrel
Austria . . . . .	All products . . . . .	30 March 1933	1)	1)
" . . . . .	Wheat, supplementary duty . . . . .	"	Gold crs. 2.80	19.27
" . . . . .	Rye, supplementary duty . . . . .	"	" 2.00	12.84
" . . . . .	Wheat-flour 2) . . . . .	"	" 21.10	474.11
" . . . . .	Rye-flour 2) . . . . .	"	" 19.50	438.09
France and Algeria . . . .	Soft wheat . . 6,062,611 bush.	1 June 1932	Free	Free
" . . . . .	Durum wheat. 551,146 "	"	"	"
" . . . . .	Rye . . . . . 19,684 "	"	"	"
" . . . . .	Barley . . . . 13,779,180 "	"	"	"
" . . . . .	Oats . . . . . 1,722,355 "	"	"	"
" . . . . .	Muize . . . . . 2,362,110 "	"	"	"
" . . . . .	Flour and groats of durum wheat. 67,489 barr.	"	"	"
France . . . . .	Maize . . . . .	1 April 1933	3)	3)
" . . . . .		15 April 1933	4)	4)
Switzerland . . . . .	Brewery barley, supplementary duties 5) . . .	18 March 1932	frs. 24.35	102.29
" . . . . .	Wheat, rye . . . . .	1 April 1933	6)	6)
" . . . . .	Barley, oats, maize, denatured flour for cattle feed . . . . .	"	7)	7)

1) For payments of customs duty the gold crown was equivalent to 1.44 schillings; since 30 March it has been equivalent to 1.80 schillings. Expressed in gold francs a gold crown equalled prior to the date mentioned 20.26 fr., from that date 25.33 fr. — 2) The duty is equivalent to the duty on 200 kg. of the same cereal, whole, plus 3.50 gold crowns. — 3) Quarterly quota of 990,000 quintals. — 4) Compensatory surtaxes for the exchange margin are as follows for the countries indicated below (for other countries, even where the currency has been devaluated, they are non-existent): Canada: 11 % ad val.; Denmark, Irish Free State, Great Britain and Northern Ireland, Mexico, Argentina, Paraguay, Uruguay, Ceylon, Strait Settlements, Federated and Non-Federated Malay States, India, Egypt, Union of South Africa, Australia, New Zealand: 15 % ad val.; U. S. S. R., China, Hong-Kong, Japan: 25 % ad val. — 5) Correction to the table on page 410 of the Crop Report for June 1932: First supplementary duty established prior to 1932: 8.85 francs; additional supplementary duty of 18 March 1932: 15.50 francs. — 6) Import of these commodities will be more strictly regulated by a new organization, the Société coopérative suisse des céréales et des matières fourragères. — 7) Import permitted only to the Société coopérative suisse des céréales et des matières fourragères.

## MONTHLY REVIEW OF PRICES

(All quotations are, unless otherwise, for spots)

PRODUCTS, MARKETS AND DESCRIPTION	13	7	31	24	AVERAGE 1)					Commercial Season	
	April	April	March	March	March	April	April	April		1931-32	1930-31
	1933	1933	1933	1933	1933	1932	1931				
<b>WHEAT.</b>											
Budapest (a): Tisza region (78 kg. p. hl.; pengő p. quintal) . . . . .	...	14.47	14.93	15.02	n. 15.18	13.38	15.70	12.28	15.34		
Braila: Good quality (lei p. quintal) 2) . . . . .	n. q.	n. q.	550	600	—	329	326	305	351		
Winnipeg: No. 1 Manitoba (cents p. 60 lbs.) . . . . .	52 1/4	50 3/4	49	48 3/4	49 1/4	61 1/2	59	59 3/4	64 1/4		
Chicago: No. 2 Hard Winter (cents p. 60 lbs.) . . . . .	n. 61 1/2	59	n. 55	n. 53 1/4	n. 53 1/4	n. 56	82 3/4	54 3/4	78		
Minneapolis: No. 1 Northern (cents p. 60 lbs.) . . . . .	62 3/4	58 1/4	54 1/2	52 1/4	52	66 1/2	79 1/2	66 3/4	77 1/4		
New-York: No. 2 Hard Winter (cents p. 60 lbs.) . . . . .	71 1/4	67 1/4	64 1/4	62 1/4	61 1/4	67 3/4	n. q.	66 1/4	n. 91 1/4		
Buenos Aires (b): Barletta (80 kg. p. hectol.; pesos paper p. quintal) . . . . .	5.60	5.60	5.35	5.40	5.33	7.04	5.66	6.68	6.83		
Karachi: Karachi white, 2 % barley, 1 1/4 % dirt (rupees p. 65 lbs.) . . . . .	29-6-0	29-6-0	30-2-0	30-2-0	30-0-5	21-11-9	18-15-0	21-15-9	19-15-2		
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	19.50	19.70	19.70	19.80	19.86	26.20	28.80	23.63	26.00		
Hamburg, c. i. f. (Reichsmarks p. quintal):											
No. 2 Manitoba . . . . .	8.60	8.68	8.42	8.46	8.72	10.98	12.05	10.38	12.65		
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 9.32	n. 13.00		
Barusso 3) . . . . .	6.90	6.93	6.85	6.89	6.98	9.26	9.77	8.78	11.10		
Antwerp (francs p. quintal):											
Home grown . . . . .	80.00	80.00	79.00	78.00	78.60	81.50	92.75	83.10	95.50		
No. 2 Hard Winter, Gulf 4) . . . . .	77.00	75.00	74.00	72.00	70.70	88.50	107.00	81.75	112.50		
Paris: Home-grown, 75-77 kg. (francs p. quintal) . . . . .	96.85	97.85	97.25	93.00	99.75	170.10	186.00	167.10	175.00		
London: Home grown (shillings p. 504 lbs.) . . . . .	22/9	22/9	22/9	22/9	22/9	26/4	22/-	26/5	27/1		
London and Liverpool, c. i. f., parcels, shipping current month (shillings p. 480 lbs.):											
South Russian (on sample) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	21/10	22/3	23/7		
No. 3 Manitoba . . . . .	24/3	23/10 1/2	23/-	23/3	23/5	27/5	23/2	25/9	25/4		
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	26/7	n. q.	25/3	26/4		
White Pacific . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	25/10	25/10	26/5	26/7		
Rosafé (afloat) 5) . . . . .	20/4 1/2	20/3	19/9	20/1 1/2	20.0 1/4	24/4	20/8	23/8	23/5		
Choice White Karachi . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	27/-		
Australian . . . . .	23/6	23/6	22/6	22/9	22/9 1/2	27/2	21/10	25/9	25/7		
Milan (a): Home-grown, soft, "Buono mercantile" (76-78 kg p. hl, lire p. quintal) . . . . .	100.50	99.00	103.00	104.00	104.80	118.60	106.50	106.20	109.10		
Genoa c. i. f.: Plate (shillings p. metric ton) 6) . . . . .	n. q.	n. q.	n. q.	n. q.	n. 1.55	n. 2.24	102/1	n. 2.21	110/-		
<b>RYE.</b>											
Budapest (a): Home-grown (pengo p. quintal) . . . . .	...	7.22	7.52	7.52	n. 7.67	14.87	13.31	12.24	10.79		
Berlin: Home-grown (Reichsmarks p. quintal) . . . . .	15.60	15.60	15.60	15.60	15.58	19.92	19.10	19.00	17.18		
Hamburg, c. i. f. (Reichsmarks p. quintal):											
Russian (72-73 kg p. hl.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. 10.40	n. q.	n. 9.50	n. q.		
La Plata (74-75 kg p. hl.) . . . . .	5.83	5.70	5.67	5.88	5.75	9.98	n. q.	8.36	n. 7.65		
Minneapolis: No. 2 (cents p. 56 lbs.) . . . . .	42 1/2	42 1/2	38	35	35 1/2	43 3/4	35	42 1/4	42 1/4		
Groningen (c): Home-grown (florins p. quintal) . . . . .	3.95	4.07	4.10	4.07	3.94	5.84	4.51	5.13	4.45		
<b>BARLEY.</b>											
Braila: Average quality (lei p. quintal) 2) . . . . .	158	160	160	170	—	321	261	263	232		
Winnipeg: No. 4 Western (cents p. 48 lbs.) . . . . .	28 1/4	28 1/4	27	26 7/8	26 7/8	38 1/4	25 7/8	34 1/4	26 1/4		
Chicago: Feeding (cents p. 48 lbs.) . . . . .	32	34	34	35	32 3/4	49	43 1/4	43 3/4	43 3/4		
Minneapolis: Feeding, "lower grades" (cents per 48 lbs.) . . . . .	...	24 1/2	24	24 1/4	22 3/4	42 1/4	36 3/4	38 3/4	37 1/4		
Berlin: Home-grown fodder (Reichsmarks per quintal) . . . . .	16.70	16.70	16.70	16.70	16.70	18.11	22.79	16.41	19.52		
Antwerp: Danubian (francs p. quintal) . . . . .	50.50	51.00	53.00	53.00	53.30	88.00	78.00	77.25	73.25		
London: English malting (shillings p. 448 lbs.) . . . . .	30/-	30/-	30/-	32/6	33/9 1/2	37/6	33/4	39/4	35/8		
London and Liverpool, c. i. f., parcels (shillings per 400 lbs.):											
Danubian 3 % . . . . .	14/6	14/3	n. q.	n. q.	n. q.	n. q.	16/4	n. q.	15/2		
Russian (Azoff-Black sea) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	18/11	14/3		
Canadian Western, N. 3) . . . . .	16/3	16/6	16/3	16/6	16 5/16	22/6	15/8	20/11	15/11		
Californian malting (shillings p. 448 lbs.) . . . . .	23/-	22/-	22/-	22/-	20/9 1/2	n. q.	27/6	33/4	27/8		
Groningen (c): Home grown winter (fl. p. quintal) . . . . .	3.97	4.10	4.10	4.05	4.23	6.60	5.27	5.87	4.97		

n. q. = not quoted. — n. = nominal. — a) Saturday prices. — b) Thursday prices. — c) Prices of preceding Tuesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) Owing to the freezing of the Danube the Braila exchange was closed from 20 January to 17 March. For this period quotations for Costanza are given. — 3) August-Dec. 1930: 78 kg. p. hl.; Jan. 1921 - Jan. 1932: 79 kg.; Feb-Dec. 1932: 80 kg.; afterwards: 79 kg. — 4) From July 1931: No. 1 Hard Winter, Gulf. — 5) August-Nov. 1930: 62 1/4 lbs. per bushel; Dec. 1930 - Feb. 1931: 63 1/4 lbs.; March - Nov. 1931: 63 lbs.; Dec. 1931: 63 1/4 lbs.; Jan.-Dec. 1932: 64 lbs.; afterwards 63 1/2 lbs. — 6) From April 1932: dollars p. quintal.

PRODUCTS, MARKETS AND DESCRIPTION	13	7	31	24	AVERAGE 1)				Commercial Season	
	April	April	March	March	March	April	April		1931-32	1930-31
	1933	1933	1933	1933	1933	1932	1931			
OATS.										
Bralla: Good quality (lei p. quintal) 2) . . . . .	n. q.	n. q.	n. q.	n. q.	—	305	232	285	247	
Winnipeg: No. 2 White (cents per 34 lbs.) . . . . .	24 <sup>1</sup> / <sub>2</sub>	24	24 <sup>1</sup> / <sub>2</sub>	24 <sup>1</sup> / <sub>2</sub>	24 <sup>1</sup> / <sub>2</sub>	32 <sup>1</sup> / <sub>2</sub>	27 <sup>1</sup> / <sub>2</sub>	31 <sup>1</sup> / <sub>2</sub>	30	
Chicago: No. 2 White (cents per 32 lbs.) . . . . .	21 <sup>1</sup> / <sub>2</sub>	21	20 <sup>1</sup> / <sub>2</sub>	19 <sup>1</sup> / <sub>2</sub>	18 <sup>1</sup> / <sub>2</sub>	23 <sup>1</sup> / <sub>2</sub>	30 <sup>1</sup> / <sub>2</sub>	24 <sup>1</sup> / <sub>2</sub>	32 <sup>1</sup> / <sub>2</sub>	
Buenos Aires (a): Current quality (pesos paper p quintal) . . . . .	4.00	4.00	4.00	4.10	4.08	5.71	3.52	5.33	3.58	
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	12.45	12.45	12.45	12.55	12.61	16.42	17.70	15.10	16.17	
Paris: Home grown, black and other (francs p. quintal) . . . . .	68.75	69.85	67.00	69.10	71.05	117.00	89.35	101.75	81.00	
London: Home grown white (shillings p. 336 lbs.). London and Liverpool c. i. f., parcels (shillings p. 320 lbs.) . . . . .	18/-	18/-	18/-	18/-	18/-	22/3	17/10	21/3	18/4	
Danubian (39-40 lbs.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 12/1	
Plate (f. a. q.) . . . . .	11/4 <sup>1</sup> / <sub>2</sub>	11/4 <sup>1</sup> / <sub>2</sub>	11/9	11/9	11/9	14/10	10/7	14/5	10/9	
Chilian Tawny . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	11/7	n. 16/-	12/-	
Milan (b): spot (lire p. quintal): . . . . .										
Home grown . . . . .	60.50	60.50	62.50	62.50	64.30	n. 77.00	73.50	73.60	74.00	
Foreign imported . . . . .	51.00	51.00	52.00	52.50	53.00	65.00	57.50	65.20	60.40	
MAIZE.										
Bralla: Danubian (lei p. quintal) 2) . . . . .	149	148	150	149	—	213	234	187	210	
Chicago: No. 2 Mixed American (cents p. 56 lbs.).	33 <sup>1</sup> / <sub>2</sub>	34 <sup>1</sup> / <sub>2</sub>	30 <sup>1</sup> / <sub>2</sub>	28 <sup>1</sup> / <sub>2</sub>	27 <sup>1</sup> / <sub>2</sub>	32 <sup>1</sup> / <sub>2</sub>	59 <sup>1</sup> / <sub>2</sub>	34	58 <sup>1</sup> / <sub>2</sub>	
Buenos Aires (a): Yellow Plate (pesos paper p. quintal) . . . . .	3.92 <sup>1</sup> / <sub>2</sub>	4.02 <sup>1</sup> / <sub>2</sub>	3.80	4.00	4.11	4.66	3.56	4.63	3.82	
Antwerp, spot (francs p. quintal): . . . . .										
Bessarabian . . . . .	48.00	49.00	49.50	50.00	49.60	n. q.	80.25	n. q.	71.25	
Argentine Cusquantino . . . . .	72.00	70.00	71.00	74.00	74.30	66.75	91.75	63.30	81.00	
Yellow Plate . . . . .	55.00	53.50	54.50	53.00	52.60	63.25	79.25	57.20	65.00	
London and Liverpool, parcels, c. i. f. (shillings p. 480 lbs., 3): . . . . .										
Danubian . . . . .	16/-	15/10 <sup>1</sup> / <sub>2</sub>	16/-	16/3	16/5 <sup>1</sup> / <sub>2</sub>	n. q.	19/2	n. 19/3	n. 17/4	
Yellow Plate . . . . .	16/9	16/4 <sup>1</sup> / <sub>2</sub>	17/-	17/9	17/8 <sup>1</sup> / <sub>2</sub>	18/10	18/3	18/2	15/6	
No. 2 White African . . . . .	n. q.	n. q.	17/4 <sup>1</sup> / <sub>2</sub>	17/4 <sup>1</sup> / <sub>2</sub>	17/5	n. q.	18/10	n. 20/11	n. 18/1	
Milan (b): Home grown (lire p. quintal) . . . . .	45.00	45.00	49.50	50.50	51.30	77.90	51.00	68.70	51.90	
RICE (CLEANED).										
								1932	1931	
Milan (b): Maratelli (lire p. quintal) . . . . .	136.00	136.00	136.00	135.00	135.20	153.30	118.50	151.25	117.35	
Rangoon: No. 2 Burma (rupees p. 7500 lbs.) . . . . .	182 <sup>1</sup> / <sub>2</sub>	n. q.	177 <sup>1</sup> / <sub>2</sub>	185	n. 185 <sup>1</sup> / <sub>2</sub>	300	235	268 <sup>1</sup> / <sub>2</sub>	249 <sup>1</sup> / <sub>2</sub>	
Saigon (Indo-chinese piastres p. quintal): . . . . .										
No. 1 Round white (25 % broken) . . . . .	...	...	...	...	7 ...	6.12	6.30	5.48	6.73	
No. 2 Japan (40 % broken) . . . . .	...	...	...	...	8 ...	5.60	5.65	5.11	6.20	
London (a): c. i. f. (shillings p. 112 lbs.) . . . . .										
Spanish Belloch, No. 3 oiled . . . . .	n. q.	12/3	n. q.	11/9	12/-	12/7	12/2	13/8	11/11	
Italian good, No. 6 oiled . . . . .	n. q.	9/4 <sup>1</sup> / <sub>2</sub>	10/7 <sup>1</sup> / <sub>2</sub>	10/4 <sup>1</sup> / <sub>2</sub>	10/2	14/1	14/2	14/-	13/7	
American Blue Rose . . . . .	n. q.	15/9	15/9	15/6	14/9 <sup>1</sup> / <sub>2</sub>	16/-	17/9	17/1 <sup>1</sup> / <sub>2</sub>	18/7	
Burma, No. 2 . . . . .	n. q.	6/1 <sup>1</sup> / <sub>2</sub>	5/11 <sup>1</sup> / <sub>2</sub>	6/2 <sup>1</sup> / <sub>2</sub>	6/4 <sup>1</sup> / <sub>2</sub>	9/-	7/5	8/4	7/11	
Saigon, No. 1 . . . . .	n. q.	6/3	6/3	6/6	6/7 <sup>1</sup> / <sub>2</sub>	9/-	7/4	8/5	8/1	
Slam, Garden, No. 1 4) . . . . .	n. q.	7/7 <sup>1</sup> / <sub>2</sub>	7/6	7/9	7/8 <sup>1</sup> / <sub>2</sub>	10/2	9/1	9/4 <sup>1</sup> / <sub>2</sub>	9/5	
Tokio: Chumai (brown Japanese, average quality; yens p. koku) . . . . .	21.30	21.60	21.60	21.30	21.64	21.85	18.22	21.20	18.46	
LINSSEED.										
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	9.10	9.05	8.80	9.00	8.99	9.16	10.36	9.22	10.82	
Antwerp: Plate (francs p. quintal) . . . . .	97.00	95.50	97.50	101.00	99.00	102.50	153.00	103.25	146.00	
London, c. i. f. (1 <sup>1</sup> / <sub>2</sub> p. long ton): . . . . .										
La Plata (delivery Hull) . . . . .	8-5-0	8-2-6	7-18-9	8-2-6	8-3-0	7-17-3	8-6-10	8-8-4	8-14-1	
Bombay bold . . . . .	9-17-6	9-8-9	9-6-3	9-16-3	10-1-3	11-7-0	n. q.	-10-0	11-9-6	
Bombay: No. 1 Northern (cents p. 56 lbs.) . . . . .	119 <sup>1</sup> / <sub>2</sub>	115	111 <sup>1</sup> / <sub>2</sub>	111	111 <sup>1</sup> / <sub>2</sub>	136 <sup>1</sup> / <sub>2</sub>	155 <sup>1</sup> / <sub>2</sub>	118 <sup>1</sup> / <sub>2</sub>	148	

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) See same note on preceding page. — 3) White Russian: 13 April: n. q.; 7 April, 31 and 24 March: 16/9, March average: 16/9<sup>1</sup>/<sub>2</sub>. — 4) From January 1932: Siam, Special. — 5) N. 3 White African. — 6) White East African. — 7) 17 March: 4.15; 10 March: 4.40; 3 March: 4.07; 24 Feb.: 4.27; Feb. average: 4.26. — 8) 17 March: 3.99; 10 March: 4.18; 3 March: 3.90; 24 Feb.: 4.10; Feb. average: 4.10. — 9) May delivery.

PRODUCTS, MARKETS AND DESCRIPTION	13	7	31	24	AVERAGE 1)				Commercial	
	April	April	March	March	March	April	April		Season	
	1933	1933	1933	1933	1933	1932	1931		1931-32	1930-31
<b>COTTONSEED.</b>										
Alexandria: Sakellaridis (piastres per ardeb) . . .	64.5	65.0	65.7	66.8	65.7	54.3	57.7		60.0	52.2
London: Sakellaridis (delivery Hull: £ p. 1 ton) . .	6-8-9	6-10-0	6-8-9	6-15-0	6-12-6	5-11-0	6-2-6		6-3-7	5-12-6
<b>COTTON.</b>										
New Orleans: Middling (cents per lb.) . . . . .	<sup>a)</sup> 6.57	6.47	6.26	6.37	6.24	6.08	9.99		6.20	10.07
New York: Middling (cents per lb.) . . . . .	<sup>a)</sup> 6.70	6.55	6.30	6.50	6.42	6.13	10.25		6.35	10.38
Bombay: M. g. Broach f. g. (rupees per 784 lbs.) .	178	174	175	178	180 <sup>1</sup> / <sub>4</sub>	182 <sup>1</sup> / <sub>2</sub>	193 <sup>1</sup> / <sub>4</sub>		181 <sup>1</sup> / <sub>4</sub>	191 <sup>1</sup> / <sub>4</sub>
Alexandria (talari per kantar):										
Sakellaridis f. g. f. . . . .	13.45	13.10	12.95	12.95	12.85	11.65	15.78		12.17	17.12
Ashmuni-Zagora f. g. f. . . . .	11.57	11.22	11.07	11.12	11.18	10.16	11.65		9.73	12.00
Bremen: Middling (U. S. cents per lb.) . . . . .	7.66	7.76	7.55	7.59	7.59	7.40	11.35		7.44	11.59
M. g. Broach fully good (pence per lb) . . . . .	<sup>a)</sup> n. 4.35	n. 4.20	n. 4.20	n. 4.30	n. 4.32	n. 4.59	n. 4.84	n.	4.48	n. 4.63
Le Havre: Middling, Gulf (francs per 50 kg.) . .	236.00	237.00	228.00	231.00	227.00	221.00	352.00		216.00	349.00
Liverpool (pence per lb.):										
Middling fair . . . . .	n. 6.57	n. 6.48	n. 6.35	n. 6.33	n. 6.30	n. 5.86	n. 6.83	n.	5.85	n. 6.93
Middling . . . . .	5.37	5.28	5.15	5.13	5.10	4.86	5.63		4.79	5.72
São Paulo, good fair . . . . .	n. 5.62	n. 5.53	n. 5.40	n. 5.43	n. 5.39	n. 5.08	5.83	n.	4.98	5.91
M. g. Broach, fully good . . . . .	n. 4.58	n. 4.49	n. 4.30	n. 4.44	4.45	n. 4.46	n. 4.31	n.	4.34	n. 4.25
Sakellaridis, fully good fair . . . . .	7.48	7.27	7.10	7.18	7.12	6.59	8.75		6.76	9.08
<b>BUTTER.</b>										
									1932	1931
Copenhagen (a) Danish (Crs. p. quintal). . . . .	144.00	144.00	144.00	152.00	158.40	166.00	200.00		178.70	209.00
Leeuwarden, Commission for the Dutch butter										
quotations: (florins per kg.) . . . . .	0.53	0.52	0.50	0.47	0.53	0.99	1.35		0.94	1.34
Maastricht, auction (b): Dutch (florins p. kg.) . .	n. q.	n. q.	n. q.	n. q.	n. q.	1.00	1.40		1.27	1.38
Hamburg, auction (c): Schleswig-Holstein butter,										
with quality mark (R. M. per 50 kg) . . . . .	89.23	89.16	89.32	90.33	93.10	115.93	128.35		115.83	131.22
Kempten (c): Allgäu butter (Pfennige p. half kg.) <sup>a)</sup>	83	83	81	81	82 <sup>1</sup> / <sub>4</sub>	111 <sup>1</sup> / <sub>4</sub>	110 <sup>1</sup> / <sub>4</sub>		107	110
London (d) (shillings p. cwt):										
British blended . . . . .	112/-	112/-	112/-	116/8	115/6	134/2	144 8	<sup>a)</sup> 131/6	140/4	
Danish . . . . .	94/-	98/-	102/-	105/-	106/-	122/-	128/-	<sup>a)</sup> 123/1	133/4	
Irish creamery, salted . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	<sup>a)</sup> n. 111/-	119/5	
Dutch . . . . .	n. q.	n. q.	n. q.	115/-	115/6	n. q.	128/6	<sup>a)</sup> 115/10	132/1	
Argentine . . . . .	74/-	74/-	76/-	79/-	78/-	112/-	117/2	<sup>a)</sup> 103/10	117/7	
Siberian <sup>a)</sup> . . . . .	n. q.	n. q.	76/-	n. q.	77/-	n. q.	n. q.	<sup>a)</sup> n. 93/5	n. q.	
Australian, salted . . . . .	71/-	74/-	80/-	83/-	81 7/16	111/9	115/2	<sup>a)</sup> 105/8	116/8	
New Zealand, salted . . . . .	73/-	76/-	82/-	85/-	83 2/15	114/6	116/7	<sup>a)</sup> 110/-	119/11	
<b>CHEESE.</b>										
Milan (lire per quintal):										
Parmigiano-Reggiano, 1st quality of last year's										
production . . . . .	1,050.00	1,050.00	1,050.00	1,012.00	1,020.00	1,015.00	1,112.00		1,016.00	1,103.00
Grecn Gorgonzola, mature, choice . . . . .	480.00	515.00	515.00	520.00	533.00	467.00	645.00		512.70	616.00
Rome: Roman pecorino, choice (lire p. quintal) .	1,125.00	1,125.00	1,125.00	1,075.00	1,185.00	1,287.00	1,094.00		1,251.00	1,121.00
Alkmaar. Edam 40 + (40 % butterfat, with										
the country's cheesemark, factory cheese, small;										
florins p. 50 kg.) . . . . .	20.00	20.00	20.00	22.00	22.90	21.40	32.62		24.41	32.63
Gouda: Gouda 45 + (whole milk cheese, with										
the country's cheesemark, home made; florins										
p. 50 kg.) . . . . .	25.00	25.00	25.50	25.50	26.30	21.30	35.50		26.92	37.93
Kempten (c); (Pfennige per half kg.) . . . . .										
Soft cheese, green (20 % butterfat). . . . .	18	18	18	16	17 <sup>1</sup> / <sub>4</sub>	20 <sup>1</sup> / <sub>4</sub>	20 <sup>1</sup> / <sub>4</sub>		21	24
Emmenthal from the Allgäu (whole milk										
cheese) 1st quality . . . . .	74 <sup>1</sup> / <sub>4</sub>	74 <sup>1</sup> / <sub>4</sub>	74 <sup>1</sup> / <sub>4</sub>	74 <sup>1</sup> / <sub>4</sub>	74 <sup>1</sup> / <sub>4</sub>	83	98 <sup>1</sup> / <sub>4</sub>		81 <sup>1</sup> / <sub>4</sub>	97 <sup>1</sup> / <sub>4</sub>
London (d) (shillings per cwt.):										
English Cheddar . . . . .	100/-	100/-	100/-	101/-	101 7/16	120/-	106/-	<sup>a)</sup> 109/-	99/10	
Canadian . . . . .	70/-	70/6	72/-	72/-	71 8/16	78.9	79/8	<sup>a)</sup> 72/9	75/9	
New Zealand . . . . .	46/-	47/6	49/-	50/6	49 7/16	65/1	56/8	<sup>a)</sup> 63/2	63/2	
Liverpool (d): Engl. Cheshire, ungraded (sh. p. cwt.)	60/6	60/6	65/4	65/4	65/4	137/8	100/4	<sup>a)</sup> 103/10 <sup>1</sup> / <sub>4</sub>	94/3	

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Prices of preceding Tuesday. — c) Wednesday prices. — d) Average prices for weeks ending on preceding Wednesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) The method of quotation has been changed as from January 1932; actual prices are generally 3 Pf. higher than according to the former system. — 3) September 1932-Jan. 1933: Russian. — 4) Wednesday price. — 5) Provisory average. — 6) 14 April.

## QUARTERLY REVIEW OF PRICES 1)

GROUPS	COUNTRIES AND PRODUCTS	AVERAGE								
		March	Feb.	Jan.	Oct.- Dec.	Jan.- March	Jan.- March	Agricultural year 2)		
		1932	1933	1933	1932	1932	1931	1931-32	1930-31	
GERMANY (Prices in Reichsmarks per quintal)										
A I	*Wheat (Berlin)	19.86	19.30	18.52	19.45	24.08	27.30	23.64	26.39	
	*Rye (Berlin)	15.58	15.47	15.17	15.51	19.62	16.43	19.02	17.15	
	*Barley, feeding (Berlin)	16.70	16.25	16.10	16.53	16.30	20.08	16.35	19.64	
	*Oats (Berlin)	12.61	11.92	11.34	12.89	14.85	14.78	15.07	16.28	
	*Red potatoes (Berlin)	2.56	2.66	2.74	2.62	3.81	2.72	3.57	3.29	
A II	Milk, fresh (Berlin)	13.85	13.85	13.85	13.85	14.11	18.14	15.06	17.62	
	*Butter (Hamburg)	186.20	188.70	194.32	235.26	214.25	292.80	245.35	282.10	
	*Cheese, Emmenthal variety (Kempten) 3)	149.00	149.00	149.00	155.83	167.17	197.00	180.10	192.00	
	*Beef, live weight (Berlin)	60.80	61.00	61.40	60.50	70.70	101.60	76.06	106.32	
	*Veal, live weight (Berlin)	68.60	61.80	59.00	73.00	70.60	110.35	81.87	126.23	
	*Pork, (220-265 lb.), live weight (Berlin)	73.00	75.20	71.20	81.90	81.15	104.85	87.75	111.25	
B I	Basic slag (Aachen) 4)	0.265	...	...	0.225	0.225	0.32	0.23	0.30	
	*Superphosphate of lime 18 % (Hildesheim) 4)	0.310	0.310	0.310	0.310	0.310	0.341	0.319	0.335	
	*Potash salts 38-42 % (mine stations) 4)	0.170	0.170	0.170	0.170	0.170	0.190	0.159	0.151	
	Sulphate of Ammonia 4)	0.76	0.76	0.74	0.70	0.75	0.85	0.73	0.83	
	Nitrate of lime 4)	0.99	0.97	0.95	0.93	0.98	1.05	0.98	1.03	
B II	Wheat bran (Hamburg)	8.17	8.45	8.47	8.19	9.00	10.58	9.86	9.97	
	Linseed cake (Hamburg)	10.79	10.54	10.39	10.12	11.85	15.63	12.23	15.39	
	Coconut cake (Hamburg)	10.55	10.62	10.59	10.20	11.25	13.33	11.30	13.32	
	Groundnut cake (Hamburg)	10.71	10.62	10.60	10.87	12.73	12.45	11.99	12.50	
	Crushed soya extraction residue (Hamburg)	9.27	9.01	9.39	10.89	11.13	14.01	11.26	13.44	
DENMARK (Prices in Danish crowns per quintal)										
A I	Wheat (Copenhagen)	11.50	12.00	10.62	10.61	11.62	10.40	11.92	12.41	
	Barley (Copenhagen)	11.70	12.00	11.25	11.33	14.18	10.40	13.13	11.18	
	Oats (Copenhagen)	11.05	11.75	11.00	10.53	13.25	11.20	12.87	11.86	
A II	*Butter (Copenhagen)	158.40	178.25	159.25	183.53	202.50	228.35	192.50	225.00	
	*Eggs	60.00	130.00	111.00	154.50	88.97	114.00	98.00	121.00	
	*Pork, live weight	113.00	93.50	73.00	81.00	64.40	86.00	73.00	98.00	
B I	Superphosphate 18 %	6.50	6.50	5.89	5.62	5.90	5.93	5.65	5.85	
	Potash salts 40 %	13.65	13.65	13.65	13.44	13.67	12.95	12.98	12.62	
	Sulphate of ammonia	14.70	14.45	14.20	13.63	12.25	17.58	12.18	17.43	
	Nitrate of lime, Norwegian	14.55	14.35	14.15	13.65	15.40	16.82	13.73	16.35	
B II	Rye, imported (Jutland)	10.50	10.07	8.95	9.12	11.44	7.85	10.31	8.60	
	Maize, Plate (Jutland) 5)	10.64	10.65	9.54	9.45	9.25	7.73	8.64	9.23	
	Wheat bran, Danish (Copenhagen)	9.32	9.72	8.75	9.02	9.87	9.22	9.26	9.12	
	Cottonseed cake (Copenhagen)	13.68	13.90	12.70	13.12	12.73	14.11	12.18	14.37	
	Sunflower-seed cake (Copenhagen)	14.40	14.67	13.32	13.14	11.45	12.36	11.50	12.55	
	Groundnut cake (Copenhagen)	15.96	16.45	15.05	15.01	15.76	12.35	13.99	12.58	
	Crushed soya extraction residue (Copenhagen)	15.00	15.37	14.42	14.91	13.70	13.37	12.94	13.08	

\*) Indicates that the series is published also in the Intern. Yearbook of Agricultural Statistics.

1) Each quarter a list is published for several countries containing prices of plant (A I) and animal (A II) products sold by the farmer, as well as of fertilizers (B I), and of concentrated feeding stuffs for livestock (B II) bought by the farmer. — In the case where the market price is not indicated, the price is the average one for the country. — The prices paid to farmers for sugar beet are generally fixed once a year and are therefore not inserted in these tables. — 2) July to June. — 3) From January 1931 prices of the first quality; before that date average prices of all qualities. — 4) Prices per unit of fertilizer material in a metric quintal. — 5) Until June 1931: prices Copenhagen. — 6) Wheat bran, La Plata.

GROUPS	COUNTRIES AND PRODUCTS	AVERAGE							Agricultural year	
		March	Feb.	Jan.	Oct. Dec.	Jan. March	Jan. March	1931-32	1930-31	
		1933	1933	1933	1932	1932	1931			
FRANCE (Prices in francs per quintal)										
A I	*Wheat (Paris, . . . . .)	99.75	107.35	109.10	113.10	170.75	177.03	167.75	173.90	
	Rye (Paris) . . . . .	76.00	78.00	79.00	79.50	100.00	81.35	99.65	84.60	
	Malting barley (Paris) . . . . .	76.00	84.00	88.00	87.00	98.35	92.35	96.25	92.35	
	*Oats (Paris) . . . . .	71.05	78.60	80.05	85.75	106.10	78.10	99.35	79.80	
	Wine, red (southern markets) (hectol.) . . . . .				124.50	86.00	154.00	101.00	154.00	
A II	*Beef, dead weight (Paris) . . . . .	574.00	594.00	577.00	619.00	693.00	1,042.00	783.00	1,050.00	
	*Pork, live weight (Paris) . . . . .	724.00	760.00	747.00	715.00	543.00	614.00	593.00	665.00	
	*Mutton, dead weight (Paris) . . . . .	1,218.00	1,181.00	1,080.00	1,053.00	1,008.00	1,522.00	1,123.00	1,504.00	
B I	*Basic slag, 18 % (Thionville) . . . . .	22.50	22.50	22.50	22.50	23.40	25.20	23.40	24.30	
	*Superphosphate 14 % (North and East) . . . . .	27.25	26.85	26.85	25.00	26.65	30.40	27.75	31.15	
	*Sylvinit, minimum 12 % . . . . .	10.60	10.60	10.60	11.25	10.60	10.60	10.60	10.60	
	Nitrate of soda (Dunkirk) . . . . .	91.50	90.50	89.50	93.65	98.15	110.00	101.25	109.40	
	Sulphate of ammonia 20.4 % . . . . .	94.00	93.00	92.50	95.25	100.15	114.00	101.85	112.20	
B II	Linseed cake (North) . . . . .	67.00	70.50	71.75	71.00	77.10	103.00	80.00	103.00	
	Coconut cake (Marseilles) . . . . .	68.00	68.00	68.00	66.50	68.50	67.00	70.00	73.00	
	Groundnut cake (Marseilles) . . . . .	63.00	67.00	68.00	70.35	79.15	81.00	78.75	85.00	

## GREAT BRITAIN (A: Prices in shillings and pence per cwt;

B: Prices in pounds sterling, etc. per long ton)

A I	Wheat . . . . .	5/10	5/3	5/3	5/5	5/10	5/3	6 -	6/4
	Fodder barley . . . . .	6/3	6/9	7/0	7/5	8/3	8/1	8/1	7/11
	Oats . . . . .	5/11	6 -	5/9	5/11	7/3	5/9	7 -	6/1
	*Potatoes (London) . . . . .	4/6	4/10	5/1	5/2	11/4	6/11	9/10	7/-
A II	*Butter (London) . . . . .	115/6	116/7	121/4	126/9	132/7	140/5	136 -	144/9
	*Cheese, Cheddar (London) . . . . .	101/7	104 -	106 -	104 2	115/2	98 8	109/-	98/4
	*Beef, dead weight (London) . . . . .	69/0	71/2	74 8	64/4	74/6	76/3	76 -	79 2
	*Mutton, dead weight (London) . . . . .	91/2	83/8	85/2	68/10	78/2	99/9	84/2	107/10
	*Pork, dead weight (London) . . . . .	81/8	77 -	79 4	71/4	75,1	103/10	74/4	102/10
B I	*Basic slag 14 % (London) . . . . .	2- 3- 0	2- 3- 0	2- 3- 0	2- 3- 0	2- 1- 0	2- 3- 0	2- 1- 6	2- 2- 3
	Superphosphate, 16 % (London) . . . . .	2-16- 0	2-16- 0	2-16- 0	2-16- 0	2-17- 0	3- 2- 8	2-17- 2	3- 3- 6
	Kamit 14 % (London) . . . . .	3- 7- 0	3- 7- 0	3- 7- 0	3- 5- 0	3- 6- 4	3- 3- 8	3- 3- 0	3- 1- 6
	*Nitrate of soda, 15 1/2 % (London) . . . . .	8-16- 0	8-15- 6	8-14- 0	8-10- 4	8-16-18	9-19- 4	8-17- 6	9-16-8
	*Sulphate of ammonia 20.6 % (London) . . . . .	6- 9- 5	6- 6- 6	6- 5- 0	5-12- 8	7- 0- 0	9- 9- 4	6-15-11	9- 7- 2
B II	Bran, British (London) . . . . .	5- 6-10	5-13- 6	5-15- 0	5-15- 2	6- 7- 9	4-18-11	5-14-10	4-16-4
	Bran, middlings, imported (London) . . . . .	4-15- 0	4-19- 6	5- 2- 0	5-10-10	5-15- 7	4- 6- 5	5-11- 9	4-11-5
	Linseed cake, English (London) . . . . .	8-15- 0	8-14- 3	8- 9- 6	6- 9- 2	8-14- 5	9-10- 1	8-11- 3	9-12-6
	Cottonseed cake (London) . . . . .	5-17- 0	6- 2- 0	6- 0- 9	5- 8- 7	5- 8- 2	5- 1- 3	5- 2- 6	4-17-8
	Palm kernel cake (Liverpool) . . . . .	6- 5- 0	6- 0- 0	6- 0- 0	6- 2- 0	6-15- 6	n. q.	6-11- 2	5- 9- 2

## ITALY (Prices in lire per quintal)

A I	*Wheat, soft (Milan) . . . . .	104.80	107.85	111.75	111.55	114.80	105.45	105.65	111.90
	Wheat, hard (Pulermo) . . . . .	121.00	123.00	124.00	124.00	136.00	130.00	133.00	135.00
	*Oats (Milan) . . . . .	64.30	66.15	67.50	67.50 n.	76.50	73.50	73.30	74.30
	*Maize (Milan) . . . . .	51.30	55.15	57.75	57.90	67.10	49.40	64.00	56.30
	*Rice (Milan) . . . . .	135.20	136.85	138.60	140.95	147.00	109.65	135.40	125.55
	Hemp, fibre . . . . .	...	273.00	274.00	268.00	213.00	192.00	217.00	248.00
	*Olive oil "Soprafino locale" (Bari) . . . . .	390.00	400.00	425.00	438.00	483.00	549.00	518.00	552.00
	*Wine, ordinary, 11° to 13° (Bari) (hectol.) . . . . .	65.00	65.00	67.00	75.00	80.00	111.00	86.00	118.00

\* Indicates that the series is published also in the Intern. Yearbook of Agricultural Statistics. — † Indicates that the series is published also in the Monthly Review of Prices of this Crop Report.

1) Dec. 1932: 294.00.

GROUPS	COUNTRIES AND PRODUCTS	AVERAGE							Agricultural year	
		March	Feb.	Jan	Oct.-	Jan.-	Jan -			
		1933	1933	1933	Dec. 1932	March 1932	March 1931			
									1931-32	1930-31

ITALY (continued)

A II	*Cheese (Parmigiano-Reggiano) (Milan) . . . . .	1,020.00	1,012.00	1,012.00	977.00	979.00	1,104.00	1,026.00	1,139.00	
	Eggs, fresh (Milan) (per 100) . . . . .	27.15	37.10	41.00	56.95	35.85	41.75	40.25	47.00	
	Beef, live weight (Milan) . . . . .	245.00	270.00	n. q.	297.00	324.00	381.00	321.00	406.00	
	Pork, live weight (Milan) . . . . .	410.00	415.00	415.00	448.00	361.00	414.00	363.00	443.00	
B I	Basic slag 16-20 % (Chiasso) 1) . . . . .	2) 0.96	2) 0.96	1.510	1.512	1.050	1.36	1.06	1.29	
	Superphosphate, mineral, 15-17 % (Genoa) 1) . . . . .	1.195	1.195	1.195	1.195	1.195	1.20	1.19	1.24	
	Chloride of potassium (Genoa) . . . . .	66.50	66.50	66.50	66.50	71.15	78.40	72.00	80.25	
	Sulphate of ammonia (Genoa) . . . . .	80.50	79.75	78.50	76.55	77.15	78.70	75.40	81.75	
	Copper sulphate (Genoa) . . . . .	94.85	95.00	96.45	102.00	129.00	176.35	133.65	182.00	
B II	Wheat bran (Genoa) . . . . .	27.70	28.50	29.60	33.90	48.60	42.30	49.30	45.00	
	Rice bran (Milan) . . . . .	36.50	36.50	36.35	36.50	45.00	35.00	41.70	36.15	
	Linseed cake (Milan) . . . . .	42.50	46.50	51.25	55.15	66.30	62.50	62.15	65.60	
	Groundnut cake (Milan) . . . . .	43.25	46.50	51.75	54.65	57.40	51.25	55.15	55.10	
	Rapeseed cake (Milan) . . . . .	24.25	25.50	26.50	26.85	37.30	32.25	33.30	36.00	

NETHERLANDS (Prices in guilders per quintal)

A I	Wheat (Groningen) 3) . . . . .	n. 15.00	n. 15.00	n. 15.00	—	n. 12.50	5.87	n. 12.50	6.94	
	*Rye (Groningen) . . . . .	3.94	3.72	3.92	3.89	5.00	4.01	5.02	4.49	
	*Barley (Groningen) . . . . .	4.23	4.54	4.61	4.85	5.76	4.63	5.80	5.00	
	Oats (Groningen) . . . . .	3.91	3.98	4.03	4.41	5.98	4.65	5.76	5.30	
	Pens (Rotterdam) . . . . .	..	..	..	14.28	12.06	8.29	11.40	9.40	
	Flax, fibre (Rotterdam) . . . . .	..	..	..	45.50	54.33	61.30	52.55	60.80	
	*Potatoes (Amsterdam) . . . . .	1.90	2.37	2.50	2.64	6.57	7.74	3.97	5.03	
A II	*Butter for export (Leeuwarden) . . . . .	53.00	65.25	72.00	78.67	115.00	158.00	115.00	153.00	
	*Butter for home consumption (Maastricht) . . . . .	n. c	n. c.	n. 158.00	155.67	118.00	162.00	118.00	157.00	
	*Cheese, Gouda 45 % (Gouda) . . . . .	52.60	57.50	59.24	63.73	57.66	79.37	62.88	83.09	
	*Cheese, Edam 40 % (Alkmaar) . . . . .	45.80	49.25	50.75	54.37	55.33	68.37	56.26	74.44	
	*Eggs (Roermond) (per 100) . . . . .	..	..	..	5.79	3.94	5.92	4.52	6.26	
	Beef, dead weight (Rotterdam) . . . . .	..	..	..	62.83	73.33	94.30	76.70	100.00	
	*Pork, live weight (Rotterdam) . . . . .	..	..	..	29.67	30.33	44.80	35.35	49.00	
B I	Basic slag 2) . . . . .	0.117	0.138	0.147	0.141	0.103	0.149	0.097	0.144	
	Superphosphate 17 % . . . . .	1.95	1.95	1.97	1.95	1.93	2.60	2.15	2.68	
	Kainit 2) . . . . .	..	..	..	0.148	0.149	0.154	0.144	0.150	
	Nitrate of soda . . . . .	6.70	6.86	6.58	6.51	7.83	10.53	7.82	10.48	
	Sulphate of ammonia 20 1/2 % . . . . .	4.74	4.86	4.58	4.60	4.40	9.35	4.45	9.62	
B II	Maize (Rotterdam) . . . . .	..	..	..	3.57	3.89	4.58	3.89	5.43	
	Linseed cake, Dutch . . . . .	5.80	6.07	6.07	5.86	6.82	9.55	6.85	9.05	
	Coconut cake . . . . .	5.95	6.09	6.05	6.21	6.20	7.68	6.81	7.88	
	Groundnut cake . . . . .	6.00	6.28	6.28	6.40	7.43	7.07	7.20	7.43	

POLAND (Prices in zlotys per quintal)

A I	Wheat (Warsaw) . . . . .	36.60	31.44	26.66	26.03	26.80	25.21	27.48	31.17	
	*Rye (Warsaw) . . . . .	20.13	18.15	15.69	15.87	25.30	19.23	25.56	21.33	
	*Barley (Warsaw) . . . . .	17.46	17.04	16.32	17.17	23.90	24.64	24.42	25.55	
	Oats (Warsaw) . . . . .	16.72	15.95	15.22	16.18	23.25	22.09	24.36	24.01	
A II	Butter (Warsaw) . . . . .	374.00	281.00	278.00	378.40	406.00	445.00	397.00	486.00	
	Beef, live weight (Warsaw) . . . . .	63.00	56.00	58.00	66.20	66.17	96.65	77.55	103.00	
	Pork, live weight (Warsaw) . . . . .	116.00	100.00	95.00	100.00	91.58	130.00	124.30	152.00	
	*Eggs (Warsaw) (per 100) . . . . .	7.01	13.37	12.46	12.54	11.91	15.00	10.87	14.25	
B I	Superphosphate . . . . .	0.62	0.62	0.62	0.62	0.49	0.82	0.55	0.83	
	Potash salts 25 % . . . . .	13.75	13.75	13.25	12.92	13.75	13.75	13.75	13.75	
	Sulphate of ammonia . . . . .	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00	
B II	Wheat bran (Warsaw) . . . . .	10.90	10.50	9.60	10.10	15.53	15.50	15.62	16.52	
	Rye bran (Warsaw) . . . . .	9.90	9.70	8.35	9.15	14.10	13.10	15.03	14.15	
	Linseed cake (Warsaw) . . . . .	20.85	19.70	19.85	20.70	24.15	30.00	24.77	31.40	
	Rapeseed cake (Warsaw) . . . . .	15.30	15.35	15.75	16.45	19.05	19.50	18.71	21.90	

\*) Indicates that the series is published also in the Intern. Yearbook of Agricultural Statistics. — f) Indicates that the series is published also in the Monthly Review of Prices of this Crop Report.

2) Prices per unit of fertilizer material in a metric quintal. — 2) Price at production districts abroad — 3) See note on wheat prices in the Netherlands (page 75 of the Crop Report of January).



GROUPS	COUNTRIES AND PRODUCTS	AVERAGE							Agricultural year	
		March	Feb.	Jan.	Oct.	Jan.	Jan.	1931-32	1930-31	
		1933	1933	1933	Dec. 1932	March 1932	March 1931			

## SWEDEN (Prices in Swedish crowns per quintal)

A I	Wheat (Stockholm) 1)	17.75	17.56	17.08	16.65	17.36	19.83	17.84	19.43
	Rye (Stockholm) 1)	16.55	16.00	15.75	15.24	15.99	16.50	16.14	16.33
	Barley (Stockholm) 1)	10.75	n. q.	n. q.	10.97	12.11	11.51	12.36	12.25
	Oats (Stockholm) 1)	8.32	8.53	8.75	8.76	10.36	9.90	10.40	10.18
A II	Beef, live weight (Göteborg)	31.00	31.00	31.50	32.30	35.00	49.60	38.65	52.00
	Pork, live weight (Göteborg)	56.65	56.60	58.80	61.00	44.57	53.75	51.15	65.00
	Butter (Malmö) 2)	160.00	167.50	161.00	194.00	186.85	211.00	184.00	210.00
	Eggs (Stockholm)	62.50	98.50	98.00	139.00	85.85	115.00	95.00	144.00
B I	Superphosphate 20 %	6.77	6.77	6.77	n. 6.45	7.65	7.78	7.36	7.75
	Potash salts, 20 %	8.57	8.57	8.57	n. 8.10	7.75	7.95	7.78	7.92
	Chilisaftpeter	18.95	18.95	18.95	n. q.	18.35	19.04	18.65	18.59
	Calcium cyanamide	16.50	16.50	16.50	n. q.	15.50	18.10	16.47	18.10
B II	Maize, La Plata	9.05	9.25	9.30	9.80	9.42	9.93	9.12	10.07
	Wheat bran	9.20	9.40	9.30	9.55	10.22	10.00	9.88	9.55
	Groundnut cake	14.80	15.05	15.15	15.95	15.90	13.37	14.70	13.47
	Cottonseed cake	11.85	12.00	12.05	12.30	12.73	12.89	12.25	12.80
	Soya meal	3) 13.50	3) 13.90	3) 14.20	3) 15.15	14.45	14.10	14.25	14.08

## CZECHOSLOVAKIA (Prices in Czech. crowns per quintal)

A I	Wheat	157.00	148.50	152.50	151.35	148.15	145.30	148.00	149.00
	Rye	85.50	84.00	90.00	105.15	144.50	101.50	145.70	108.00
	Barley	79.00	79.00	79.00	81.35	110.80	141.30	116.50	134.00
	Oats	73.50	73.50	73.50	78.35	110.35	114.30	119.90	118.00
	Edible potatoes	28.50	28.50	28.50	26.50	28.15	35.30	34.60	42.85
	Hops	2,065.00	2,060.00	2,060.00	1,760.00	532.00	785.00	559.00	934.00
A II	Butter	1,600.00	1,650.00	1,950.00	2,167.00	2,025.00	2,250.00	2,158.00	2,179.00
	Fresh eggs (per 100)	54.15	85.00	92.50	82.50	60.35	82.10	58.25	74.10
	Beef, dead weight	700.00	800.00	850.00	875.00	775.00	979.00	844.00	981.00
	Veal, dead weight	775.00	725.00	625.00	817.00	742.00	925.00	769.00	981.00
	Pork, dead weight	1,000.00	1,025.00	1,025.00	1,134.00	874.00	904.00	914.00	1,014.00
B I	Basic slag, 15 %	34.85	34.85	34.85	34.85	33.55	38.95	35.05	39.20
	Superphosphate, 16 to 18 %	49.15	49.15	51.85	51.85	51.85	51.85	51.85	52.85
	Kainit, 14 %	21.00	19.95	22.10	22.10	21.55	23.00	22.00	23.10
	Chile saltpeter	147.00	147.00	n. q.	n. q.	146.00	165.50	149.75	165.15
	Sulphate of ammonia, 20 1/2 %	127.60	127.60	127.60	124.85	127.75	140.00	128.20	139.65
B II	Maize, imported	65.75	66.00	65.75	72.25	62.25	67.25	64.10	79.45
	Wheat bran (Prague)	58.50	57.00	53.50	57.40	77.00	80.80	77.25	79.00
	Rye bran (Prague)	57.50	56.50	53.50	57.40	78.00	79.65	79.00	75.00
	Crushed soya (Prague)	108.50	n. q.	n. q.	n. q.	112.35	n. q.	113.25	133.00
	Rapeseed cake (Prague)	91.50	93.75	95.50	98.95	100.00	92.40	100.00	99.00
	Linseed cake (Prague) 4)	94.50	95.75	97.50	106.75	121.35	131.75	123.00	137.00
	Groundnut cake (Prague) 5)	101.30	104.00	106.50	108.25	122.60	113.80	122.00	125.00

1) Till the end of 1932 average prices for the whole country. — 2) From November 1932 price for the whole country; butter with quality mark, c. i. f. place of consumption or port of export. — 3) Quality slightly different. — 4) From Dec. 1932 delivery at Lovosice. — 5) From Nov. 1932 delivery at Strekov.

## THE TREND OF PRICES OF AGRICULTURAL PRODUCTS

In the following pages the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

But in addition to the original data summary tables are given below.

### Quarterly general index numbers of prices of agricultural products.

(Base: first quarter of 1929 = 100).

COUNTRIES	1931				1932				1933
	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1st Quarter
Germany . . . . .	79.9	81.4	77.5	73.0	70.9	70.2	68.2	65.1	61.5
England and Wales . . . . .	87.5	85.4	83.8	79.2	81.2	79.2	72.9	70.1	72.9
Estonia . . . . .	63.7	63.9	62.8	56.7	52.8	49.3	47.3	50.0	...
Finland . . . . .	69.2	66.7	64.5	67.3	72.6	67.3	67.3	68.2	...
Hungary . . . . .	60.4	62.4	64.2	66.4	57.2	62.7	61.4	53.0	53.0
Italy . . . . .	63.7	65.1	61.4	62.4	64.5	65.4	60.1	60.0	55.8
Netherlands . . . . .	77.1	78.2	70.7	61.1	67.9	54.6	53.6	53.6	50.4
Poland . . . . .	64.0	71.4	63.4	63.3	58.7	63.7	54.4	51.3	53.8
Argentina . . . . .	60.6	59.6	59.7	63.4	58.1	56.6	58.4	52.9	50.5
Canada . . . . .	61.9	60.2	55.6	55.8	53.2	50.8	48.9	45.0	44.9
United States . . . . .	(a) 67.6 (b) 67.3	63.7	55.4	50.2	44.9	41.2	42.8	39.5	36.8
		63.7	59.3	54.4	48.3	44.5	45.9	43.3	39.7

a) Bureau of Agricultural Economics. — b) Bureau of Labor.

### Percentage variations in the index-numbers for March 1933.

COUNTRIES	compared with those for February, 1933		compared with those for March, 1932	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general
Germany . . . . .	+ 0.4	— 0.1	— 14.5	— 8.7
England and Wales . . . . .	— 3.8	— 0.0	— 9.7	— 8.4
Argentina . . . . .	+ 0.4	—	— 16.6	—
Canada . . . . .	+ 4.0	+ 1.3	— 13.5	— 6.8
Estonia . . . . .	...	—	...	—
United States . . . . .	(a) + 2.0 (b) + 4.6	—	— 18.0	—
Finland . . . . .	...	+ 0.7	— 14.7	— 8.8
Hungary . . . . .	— 1.4	— 1.2	— 6.5	— 3.3
Italy . . . . .	— 5.2	— 1.8	— 22.8	— 17.2
New Zealand . . . . .	...	—	— 17.6	— 10.8
Netherlands . . . . .	— 2.1	— 2.8	...	—
Poland . . . . .	+ 1.4	— 0.3	— 11.5	— 12.3
Yugoslavia . . . . .	(c) — 5.8 (d) — 3.5	— 2.0	(c) — 6.3 (d) + 5.5	— 9.4 — 1.2

a) Bureau of Agricultural Economics. — b) Bureau of Labor. — c) Vegetable products — d) Animal products.

# INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER \*

COUNTRIES AND CLASSIFICATIONS	March	Feb.	Jan.	Dec	Nov.	Oct.	March	March	Year	
	1933	1933	1933	1932	1932	1932	1932	1931	1932	1931
									1)	
GERMANY										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of vegetable origin . . . . .	99.0	97.0	95.7	96.6	99.1	100.3	121.6	121.6	112.0	119.3
Livestock . . . . .	61.3	60.5	57.9	60.6	63.5	66.2	65.6	96.7	65.5	83.0
Livestock products . . . . .	84.6	88.0	87.5	96.9	103.4	98.7	97.6	113.0	93.9	108.4
Feeding stuffs . . . . .	83.8	81.8	81.9	83.2	84.4	85.2	99.0	102.7	91.6	101.9
Total agricultural products . . . . .	82.5	82.2	80.9	84.4	87.8	88.0	96.5	106.7	91.3	103.8
Fertilizers 2) . . . . .	72.7	73.4	72.6	70.2	69.8	69.4	72.2	82.7	—	76.5
Agricultural dead stock . . . . .	111.2	111.5	112.5	113.1	113.6	113.9	117.2	132.4	116.1	130.7
Finished manufactures (« Gebrauchs- güter ») . . . . .	109.5	110.5	111.4	112.0	112.5	113.0	121.5	143.6	117.5	140.1
Wholesale products in general . . . . .	91.1	91.2	91.0	92.4	93.3	94.3	99.8	113.9	96.5	110.9
ENGLAND AND WALES										
(Ministry of Agriculture and Fisheries)										
Average of corresponding months										
1911-13 = 100.										
Agricultural products . . . . .	102	106	107	103	101	100	113	123	109	120
Feeding stuffs . . . . .	90	91	92	90	90	89	102	85	95	83
Fertilizers . . . . .	90	90	90	89	88	87	91	100	90	96
Wholesale products in general 3) . . . . .	90.6	90.6	91.5	91.4	91.6	91.5	98.9	100.6	94.9	97.7
ARGENTINA										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed . . . . .	51.7	52.6	53.8	52.2	55.5	60.0	63.1	53.2	59.5	55.8
Meat . . . . .	64.0	57.7	55.2	56.8	60.9	65.3	71.8	94.7	69.8	94.3
Hides and skins . . . . .	49.9	49.1	54.5	51.4	54.7	54.6	61.6	70.1	53.1	64.5
Wool . . . . .	40.8	40.8	42.1	36.8	40.7	45.2	48.7	64.5	44.2	61.2
Dairy products . . . . .	51.8	52.3	53.9	53.3	53.7	53.7	58.8	74.3	56.9	74.5
Forest products . . . . .	71.8	71.8	70.9	68.5	64.9	65.2	78.3	108.7	68.4	99.3
Total agricultural products . . . . .	52.6	52.4	53.5	51.9	55.1	59.0	63.1	63.7	59.1	63.8
CANADA										
(Internal Trade Branch										
of the Dominion Bureau of Statistics)										
1926 = 100.										
Field products (grain, etc.) . . . . .	38.0	36.0	35.1	33.6	36.6	36.8	43.7	44.3	40.7	43.6
Animals and animal products . . . . .	56.0	54.2	57.9	57.8	56.9	58.4	65.2	84.7	60.9	77.6
Total Canadian farm products . . . . .	44.7	43.0	43.6	42.7	44.2	44.9	51.7	59.4	48.3	56.3
Fertilizers . . . . .	72.9	72.9	72.3	72.3	72.3	72.3	72.0	86.3	71.8	82.6
Consumer's goods (other than foodstuffs, etc) . . . . .	67.0	76.1	76.7	78.2	78.3	78.6	78.9	81.2	78.8	80.0
Wholesale products in general . . . . .	64.4	63.6	63.9	64.0	64.8	65.0	69.1	74.5	67.0	72.1
ESTONIA										
(Central Bureau of Statistics)										
1913 = 100.										
Commodities imported 4) . . . . .	...	...	...	111	112	112	113	120	113	129
Commodities exported . . . . .	58	58	58	59	63	57	68	84	58	76
Agricultural products imported and export- ed 4) . . . . .	..	...	...	74	77	72	81	95	74	91

\*) For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication "Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer" (Rome, 1930), as well as to pages 77 to 79 of the "Crop Report" of January 1932 and to page 517 of the "Crop Report" of July 1932.

2) Most data for 1932 are provisional. — 2) From July 1932 new series — 3) Calculated by the "Statist", reduced to 1913 = 100. — 4) From January 1932 the price of rye is excluded from the calculations.

COUNTRIES AND CLASSIFICATIONS	March	Feb.	Jan.	Dec.	Nov.	Oct.	March	March	Year	
	1933	1933	1933	1932	1932	1932	1932	1931	1932 1)	1931
<b>UNITED STATES</b> (Bureau of Agricultural Economics) Average 1909-10 to 1913-14 = 100.										
Cereals . . . . .	36	34	34	33	34	36	51	74	44	63
Fruits and vegetables . . . . .	60	57	59	59	57	59	73	109	71	98
Meat animals . . . . .	56	53	51	52	57	60	69	106	63	93
Dairy products . . . . .	59	62	68	69	68	68	76	101	70	94
Poultry and eggs . . . . .	54	57	96	121	115	102	61	92	80	96
Cotton and cottonseed . . . . .	48	44	45	43	47	51	50	80	46	63
Total agricultural products . . . . .	50	49	51	52	54	56	61	91	57	80
Commodities purchased by farmers 2) . . . . .	103	104	105	106	106	107	115	136	111	129
Agricultural wages 2) . . . . .	—	—	...	—	—	84	3) 94	3) 127	90	116
<b>UNITED STATES</b> (Bureau of Labor) 1926 = 100.										
Grains . . . . .	36.0	32.7	32.9	31.7	33.2	34.4	43.5	59.3	39.4	53.0
Livestock and poultry . . . . .	43.0	40.1	37.8	38.7	41.9	45.0	51.4	70.7	48.3	63.9
Other farm products . . . . .	45.3	44.2	48.7	51.3	53.9	52.1	52.1	74.2	51.4	69.2
Total agricultural products . . . . .	42.8	40.9	42.6	44.1	46.7	46.9	50.2	70.6	48.2	64.8
Agricultural implements . . . . .	83.1	83.1	84.5	84.5	84.6	84.7	85.0	94.7	84.9	94.0
Fertilizer materials . . . . .	61.9	61.5	62.3	63.1	63.5	63.4	68.6	80.8	66.9	76.8
Mixed fertilizers . . . . .	60.1	62.4	62.7	65.6	65.6	66.5	73.2	88.3	69.4	82.0
Cattle feed . . . . .	47.3	40.6	38.2	37.1	40.8	42.7	52.4	82.1	45.9	62.7
Non-agricultural commodities . . . . .	63.8	63.7	64.9	66.5	67.5	68.1	69.3	75.7	68.4	73.0
Wholesale products in general . . . . .	60.2	59.8	61.0	62.6	63.9	64.4	66.0	74.5	64.9	71.1
<b>FINLAND</b> (Central Bureau of Statistics) 1926 = 100.										
Cereals . . . . .	90	...	89	89	90	89	92	74	90	77
Potatoes . . . . .	93	...	78	71	69	68	69	73	71	68
Fodder . . . . .	67	...	69	66	67	67	70	70	69	63
Meat . . . . .	66	...	63	57	54	56	67	73	61	64
Dairy products . . . . .	67	...	73	77	80	76	78	74	76	76
Total agricultural products . . . . .	72	...	73	72	74	72	77	75	74	72
Wholesale products in general . . . . .	89	...	91	90	91	90	92	86	90	84
<b>HUNGARY</b> (Central Bureau of Statistics) 1913 = 100.										
Agricultural and livestock products . . . . .	71	72	71	68	69	75	92	84	—	—
Wholesale products in general . . . . .	82	83	82	81	82	80	99	94	—	—
<b>ITALY</b> (Consiglio Provinciale dell'Economia Corporativa di Milano) 1913 = 100.										
National agricultural products . . . . .	289.77	305.65	314.67	322.97	327.61	326.81	351.62	345.90	339.63	343.11
Wholesale products in general . . . . .	287.23	292.64	298.49	298.95	301.89	304.33	322.14	356.18	309.91	341.57
<b>NEW ZEALAND</b> (Census and Statistics Office) Average 1909-13 = 100.										
Dairy produce . . . . .	87.6	83.3	82.7	83.9	94.5	102.4	99.0	105.1	93.8	98.9
Meat . . . . .	111.8	119.2	123.0	108.7	100.3	95.5	112.0	126.5	109.1	130.1
Wool . . . . .	63.0	64.3	61.1	52.7	60.0	66.8	67.2	61.1	61.3	67.9
Other pastoral produce . . . . .	57.6	58.9	59.8	61.7	62.0	65.1	70.7	69.3	62.2	76.7
All pastoral and dairy produce . . . . .	80.5	85.1	85.0	79.9	84.2	88.1	91.5	95.8	86.4	96.5
Field products . . . . .	115.0	107.0	116.4	96.8	95.6	95.4	112.8	118.0	101.7	115.5
Total agricultural products . . . . .	81.4	85.7	85.8	80.4	84.5	88.3	92.1	96.4	86.8	97.0

1) Most data for 1932 are provisional. — 2) 1910-14 = 100. — 3) April.

COUNTRIES AND CLASSIFICATIONS	March	Feb.	Jan.	Dec.	Nov.	Oct.	March	March	Year	
	1933	1933	1933	1932	1932	1932	1932	1931	1932	1931
<b>NORWAY 1)</b>										
(Kgl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals . . . . .	119	119	119	116	116	116	123	104	120	125
Potatoes . . . . .	82	81	79	75	72	75	150	181	101	130
Pork . . . . .	86	90	99	98	95	100	88	81	91	96
Other meat . . . . .	113	107	106	106	101	105	119	172	109	218
Eggs . . . . .	76	103	93	111	142	120	81	124	93	108
Dairy products . . . . .	119	118	118	128	131	131	123	135	124	156
Concentrated feeding stuffs . . . . .	100	101	103	103	104	104	106	108	104	121
Maize . . . . .	87	90	89	87	91	92	87	83	90	108
Fertilizers . . . . .	92	92	91	89	87	81	89	96	89	105
<b>NETHERLANDS</b>										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Vegetable products . . . . .	40	41	40	41	43	44	56	71	2) 58	2) 72
Animal products . . . . .	48	50	50	50	55	55	51	74	2) 57	2) 77
Total agricultural products . . . . .	46	47	48	48	51	52	52	73	2) 57	2) 76
Agricultural wages . . . . .	83	83	83	83	83	83	95	100	2) 93	2) 99
Wholesale products in general 3) . . . .	48.7	50.1	50.7	51.4	52.1	52.1	55.5	69.7	77.8	65.7
<b>POLAND 4)</b>										
(Central Bureau of Statistics)										
1917 = 100.										
Vegetable products . . . . .	49.8	49.6	46.2	38.8	40.8	41.8	57.1	50.8	49.8	53.9
Worked-up plant products . . . . .	61.7	61.8	54.1	51.1	52.7	53.8	67.1	63.4	61.3	65.9
Total products of plant origin . . . . .	55.8	55.6	48.0	44.8	46.7	47.8	62.3	57.1	55.6	60.0
Animals . . . . .	43.5	40.1	37.3	37.6	39.2	41.4	39.6	58.0	43.1	55.8
Dairy products . . . . .	45.8	47.2	52.8	55.4	67.1	53.5	53.7	74.0	55.4	68.0
Total products of animal origin . . . . .	44.8	43.4	43.8	44.9	50.1	46.7	45.6	64.8	48.2	60.8
Total agricultural products . . . . .	50.7	50.0	46.2	44.8	48.1	47.3	54.1	59.8	52.0	59.7
Fertilizers . . . . .	84.8	85.8	110.8	107.6	107.6	112.9	94.1	124.7	105.5	120.2
Industrial products . . . . .	63.2	64.1	64.7	65.8	67.1	68.5	71.6	83.4	69.6	79.4
Wholesale products in general . . . . .	57.8	58.0	56.4	56.2	58.5	58.8	63.8	72.5	61.6	70.5
<b>YUGOSLAVIA</b>										
(National Bank										
of the Kingdom of Yugoslavia)										
1926 = 100.										
Vegetable products . . . . .	61.7	65.5	65.4	61.6	59.7	58.1	76.0	73.3	67.5	96.7
Animal products . . . . .	58.0	60.1	57.2	57.3	60.2	58.5	55.0	77.4	56.6	97.7
Industrial products . . . . .	73.6	73.0	73.0	68.1	67.6	67.5	68.3	72.6	66.2	80.2
Wholesale products in general . . . . .	67.8	68.4	67.6	64.8	64.7	63.9	67.8	74.6	65.2	88.8

1) The agricultural years refer to the period April 1-March 31. — 2) Agricultural year July 1-June 30. — 3) Calculated by the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100. — 4) Average data for the year 1932 are provisional.

# RATES OF FREIGHT

(Rates for entire cargoes)

VOYAGES		13	7	31	24	AVERAGE					
		April	April	March	March	March 1933	April 1932	April 1931	Commercial		
		1933	1933	1933	1933				Season		
									1931-32	1930-31	
SHIPMENTS OF WHEAT AND MAIZE.											
Danube to Antwerp/Hamburg . . .	(shill. per long ton)	14/3	14/3	14/-	14/-	14/1 1/2	14/6	13/6	14/6	13/11	
Black Sea to Antwerp/Hamburg . .		9/3	10/9	10/-	10/3	9/10 1/2	10/7	10/5	10/10	10/10	
St. John to Liverpool 1) . . . . .	n. q.	n. q.	n. q.	n. q.	1/6	1/6	1/9 1/2	n. q.	1/7	1/6	
Port Churchill to United Kingdom .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	—	—	—	—	
Montreal to United Kingdom . . . .	(shill. per 480 lbs.)	1/9	1/9	n. q.	n. q.	n. q.	0 09	2/-	0 08	1/10	
Gulf to United Kingdom . . . . .		2/-	2/-	2/-	2/-	2/1 1/2	2/7	2/-	2/6	2/3	
New York to Liverpool 1) . . . . .		1/6	1/6	1/6	1/6	1/6	1/7 1/2	1/7 1/2	1/8	1/6	
Northern Range to U. K./Continent.	n. q.	n. q.	n. 0.06	0.05 1/2	n. q.	0.05 1/2	0.09	1/8 1/2	0.09	1/9	
North Pacific to United Kingdom (sh. per long ton)		18/6	18/6	19/-	19/-	n. 19/6	22/4	21/1 1/2	n. 22/2	22/3	
Vancouver to Yokohama 1) (gold \$ per sh. ton).		1.95	1.95	2.00	2.00	2.00	2.20	2.75	2.30	2.72	
La Plata Down River 2) to U. K./Continent.		13/-	13/-	13/6	13/9	13/3	16/6 1/2	17/3	16/-	16/4	
La Plata Up River 3) to U. K./Continent..	(shill. per long ton)	14/6	14/6	15/-	15/6	14/10 1/2	17/11	18/9	17/6	18/-	
Karachi to U. K./Continent 4) . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	19/7 1/2	n. q.	19/3	
Western Australia to U. K./Continent . . . . .		22/6	22/6	22/6	22/6	22/9 1/4	26/10	28/6	26/-	29/8	
SHIPMENTS OF RICE.											
Saigon to Europe . . . . .	(shill. per long ton)	19/-	1) n. 20/-	1) n. 20/-	1) n. 20/-	1) n. 20/-	1) 23/9	1) 24/6	n. 23/5	24/3	
Burma to U. K./Continent. . . . .		22/-	22/6	22/6	72/9	22/5	26/1	23/1	n. 23/3	23/9	

n. q. = not quoted. — n. = nominal. — 1) Rates for parcels by liners. — 2) "Down River" includes the ports of Buenos Aires and La Plata. — 3) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine, Santa-Fé and Paraná) are subject to an extra rate of freight. — 4) The original data being quoted in "scale terms", 10% is added to arrive at rates per long ton. — 5) Freight in gold \$ per 100 lbs. (in the case of a loss of 30% in the value of the shilling, 10¢ c. per 100 lbs are equal to 2/10 per quarter).

# EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT OF THEIR PARITY WITH THE DOLLAR

COUNTRY	Exchange	Exchange rates				Percentage bonus (+) or loss (—) (1)			
		13 April 1933	7 April 1933	31 March 1933	24 March 1933	13 April 1933	7 April 1933	31 March 1933	24 March 1933
Germany a) . . . . .	Berlin	4.210	4.213	4 200	4.190	— 0.3	— 0.4	0.0	+ 0.2
Argentina b) . . . . .	New York	25.380	25.380	25 380	25.380	— 40.1	— 40.1	— 40.1	— 40.1
Belgium a) . . . . .	Brussels	35.746	35.777	35.729	35.752	+ 0.6	+ 0.5	+ 0.6	+ 0.6
Canada b) . . . . .	New York	83.625	82.750	82.875	83.250	— 16.4	— 17.3	— 17.1	— 16.8
Denmark a) . . . . .	Copenhagen	a) 6.605	6.580	6 560	6.542	— 43.5	— 43.3	— 43.1	— 43.0
Egypt . . . . .									
Great Britain b) . . . . .	London 2)	17.097	17.080	17.134	17 181	— 29.7	— 29.8	— 29.6	— 29.4
France a) . . . . .									
Indo-China . . . . .	Paris 3)	25.350	25.427	25 445	25.415	+ 0.7	+ 0.4	+ 0.3	+ 0.4
Hungary a) . . . . .	New York	17.520	17.550	17.550	17.550	+ 0.2	+ 0.3	+ 0.3	+ 0.3
India b) 4) . . . . .	London	25.701	25.733	25.790	25.861	— 29.6	— 29.6	— 29.4	— 29.2
Italy a) . . . . .	Milan	19.480	19.500	19.470	19.410	— 2.5	— 2.6	— 2.4	— 2.1
Japan b) . . . . .	New York	21.430	21.370	21.430	21.560	— 57.0	— 57.1	— 57.0	— 56.7
Netherlands a) . . . . .	Amsterdam	2.470	2.479	2.481	2.479	+ 0.7	+ 0.4	+ 0.3	+ 0.4
Poland a) . . . . .	Warsaw	b) 8.900	8.907	n. q.	8.915	+ 0.2	+ 0.1	n. q.	0.0
Rumania b) . . . . .	New York	n. q.	0.610	0.610	0.610	n. q.	+ 2.0	+ 2.0	+ 2.0
Sweden a) . . . . .	Stockholm	5.550	5.545	5.515	5.515	— 32.8	— 32.7	— 32.3	— 32.3
Czechoslovakia a) . . . . .	Prague	33.570	33.630	33.660	33.660	+ 0.5	+ 0.4	+ 0.3	+ 0.3

a) Value of the United States dollar expressed in national currency. — b) Value of the national currency expressed in United States cent.  
 1) The percentage represents the premium or the loss as far as possible on the national exchange. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piastre and the French franc changed only slightly the exchange rate of the latter only is given. — 4) These rates have been obtained by converting the original quotations in pence per rupee into cents per rupee. — 5) Rate for 12 April.

# RECIPROCAL PARITIES OF THE VARIOUS CURRENCIES IN WHICH ARE QUOTED THE PRICES IN THE MONTHLY AND THE QUARTERLY PRICE REVIEWS (1)

COUNTRIES	Unit of Currency	Germany	Argentina	Belgium	Canada United States	Denmark	Egypt	France Indo-China (2)	Great Britain	Hungary	India	Italy	Japan	Netherlands	Poland	Rumania	Czechoslovakia	Former Latin monetary union (3)
Germany . . . . .	Reichsmark	1.000	0.561	8.566	0.238	0.889	4.819	6.080	0.979	1.352	0.653	4.526	0.478	0.593	2.123	39.825	8.040	1.235
Argentina . . . . .	Paper peso	1.782	1.000	15.263	0.424	1.584	8.586	10.833	1.744	2.427	1.163	8.064	0.851	1.056	3.872	70.959	14.326	2.200
Belgium . . . . .	Franc	0.117	0.065	1.000	0.028	0.104	0.563	0.710	0.114	0.159	0.076	0.528	0.056	0.069	0.248	4.649	0.939	0.145
Canada . . . . .	Dollar	4.198	2.356	35.959	1.000	3.731	20.230	25.524	4.110	5.718	2.740	19.000	2.006	2.488	8.914	167.181	33.751	5.183
United States . . . . .																		
Denmark . . . . .	Crown	1.125	0.631	9.637	0.268	1.000	5.422	6.840	1.101	1.532	0.734	5.092	0.538	0.667	2.389	44.803	9.045	1.389
Sweden . . . . .																		
Egypt . . . . .	Piastre	0.207	0.116	1.777	0.049	0.184	1.000	1.262	0.203	0.283	0.135	0.939	0.099	0.123	0.441	8.264	1.668	0.256
France . . . . .	Franc	0.164	0.092	1.409	0.039	0.146	0.793	1.000	0.161	0.224	0.107	0.744	0.079	0.097	0.349	6.550	1.322	0.203
Indo-China . . . . .	Piastre (2)																	
Great Britain . . . . .	Shilling	1.021	0.573	8.756	0.243	0.908	4.923	6.211	1.000	1.391	0.667	4.623	0.488	0.605	2.169	40.680	8.213	1.261
Hungary . . . . .	Pengo	0.734	0.412	6.289	0.175	0.653	3.580	4.464	0.720	1.000	0.479	3.323	0.351	0.435	1.559	29.240	5.903	0.905
India . . . . .	Rupee	1.532	0.860	13.125	0.365	1.362	7.384	9.316	1.500	2.087	1.000	6.935	0.732	0.908	3.254	61.020	12.319	1.892
Italy . . . . .	Lira	0.221	0.124	1.892	0.053	0.196	1.065	1.343	0.216	0.301	0.144	1.000	0.106	0.131	0.469	8.799	1.776	0.273
Japan . . . . .	Yen	2.092	1.174	17.924	0.498	1.860	10.084	12.723	2.049	2.850	1.366	9.471	1.000	1.240	4.443	83.333	16.824	2.583
Netherlands . . . . .	Florin	1.687	0.947	14.454	0.402	1.450	8.132	10.260	1.652	2.298	1.101	7.637	0.806	1.000	3.583	67.200	13.567	2.083
Poland . . . . .	Zloty	0.471	0.264	4.034	0.112	0.419	2.269	2.863	0.461	0.641	0.307	2.131	0.225	0.279	1.000	18.755	3.786	0.581
Rumania . . . . .	Leu	0.025	0.014	0.215	0.006	0.022	0.121	0.153	0.025	0.034	0.016	0.114	0.012	0.015	0.053	1.000	0.202	0.031
Czechoslovakia . . . . .	Crown	0.124	0.070	1.065	0.030	0.111	0.599	0.756	0.122	0.169	0.081	0.563	0.059	0.074	0.264	4.953	1.000	0.154
Former Latin monetary union (3) . . . . .	Gold Franc	0.810	0.455	6.938	0.193	0.720	3.903	4.925	0.793	1.103	0.529	3.666	0.387	0.480	1.720	32.258	6.512	1.000

(1) Each figure gives the equivalent in the currency of the country indicated at the head of the respective column of the currency unit indicated at the beginning of the respective line. —  
(2) 1 Gold piastre equals 10 francs. — (3) Data for purpose of comparison.

# MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

*The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.*

## CEREALS

The statistical situation of Canadian wheat was examined last month. A review may now be given for the United States as this country published, in the middle of May, data of the total stocks in existence in the interior of the country on 1 April.

### *The wheat situation in the United States.*

(million bushels).

	Season 1931-32	Season 1932-33
Stocks in existence on 1 July . . . . .	332	378
Production . . . . .	900	726
Total supplies for the season . . . . .	1,232	1,104
Stocks in existence on 1 April . . . . .	556	547
Quantity sold in the 9 months 1 July-31 March.	676	557
of which :		
Net exports . . . . .	96	36
Utilization within the country . . . . .	580	521

On examination of this situation, the following conclusions may be drawn.

Whereas, at the beginning of the current season the total wheat supplies in the United States were nearly 128 million bushels smaller than those of 1931-32, they are, nine months afterwards, at nearly the same level as at the same period of the preceding year, the difference having been reduced to 9 million bushels. This result is due partly to the large contraction of exports and partly to the smaller utilization within the country. It seems, therefore, that the further increase of consumption in the current season and particularly the greater use for feeding livestock reported by various authorities is not confirmed statistically since the above figures indicate, on the contrary, a considerable reduction of wheat utilization within the country.



The total of wheat stocks in the United States on 1 April permits an approximate calculation of end-of-season stocks to be made. In the three months from 1 April to 1 July last year stocks in the United States diminished from 556 to 378 millions, 178 millions having thus been disposed of, comprising 28 millions on external markets and 150 millions on internal markets. For the same three months this year a very considerable decrease in exports may be expected, prices in the United States being much higher than those on the international market, and also a decrease of about 10 %, equivalent to that experienced in the first nine months of the season, in internal consumption with respect to the corresponding period of the past year. The following figures may therefore be considered probable: 12 millions for export and 135 millions for consumption, giving a total of 147 millions for the period from 1 April to 30 June of this year. Deducting this total from the stocks as on 1 April, the total stocks in the United States at the end of the season on 1 July 1933, would amount to 400 millions against 378 millions on 1 July 1932.

It may, then, be expected that the stocks to be carried over to the next season 1933-34 will be increased in all the leading exporting countries in comparison with the season 1932-33, to a less extent in Australia and the United States and more appreciably in Canada and Argentina.

\* \* \*

As regards the prospects of the next crop, the available information may be summarized as follows. Taking account of all estimates at present known for areas sown to wheat including forecasts for spring crops, based for Canada and the United States on farmers' intentions and for the U. S. S. R. on the Government plan, the following results are obtained, compared with those of last year :

<i>Area sown to wheat</i>		
(million acres).		
	1933	1932
Europe . . . . .	61.3	60.7
Canada . . . . .	25.7	27.2
United States . . . . .	48.1	55.2
India . . . . .	32.3	33.7
North Africa . . . . .	9.8	10.6
Australia. . . . .	15.3	15.6
<hr/>		
Total . . .	192.5	203.0
U. S. S. R. . .	85.4	88.7
<hr/>		
General total . . .	277.9	291.7
<hr/> <hr/>		

The heaviest reduction is recorded in the United States, where, according to official reports, the unfavourable winter conditions have destroyed the sowings

on a much larger area than usual so that the difference between the area sown to winter wheat and that which it is hoped will be harvested, is 12,806,000 acres or 32.2 %.

Admitting that the areas sown to wheat in the countries for which data are still lacking are this year about the same as last year, the total world wheat area, excluding the U. S. S. R., China, Turkey and Persia, should reach about 235 million acres against 245.4 millions in 1932. Assuming a yield equal to the average of the last ten years, namely 14.6 bushels per acre, the calculated production corresponding to this area would be about 3,500 million bushels, whereas production in 1932 amounted to 3,675 million bushels and the average production of the period 1928-1932, to 3,690 million bushels.

But, evidently, the actual results will depend largely on the course of the season and the influence of weather conditions on yields in the different countries.

The condition of crops in Europe at the beginning of May was, on the whole, fairly satisfactory ; in several countries, however, the growth of the plants was backward compared with the normal, owing to the cold, dry weather which predominated during April. In the latter half of the month and at the beginning of May, beneficial rains fell almost everywhere.

In the U. S. S. R. the season favoured the growth of winter crops.

Forecasts of production of winter wheat in the United States, although a little better than last month, remain definitely unfavourable. On the basis of crop condition on 1 May, production was expected to be 27% smaller than in 1932 and 54 % below the average of the preceding five years but the weather during the first half of May was favourable and brought about some improvement in crop prospects.

In India, the revised estimate for the Punjab indicates a crop above the first estimates and about equal to that of last year ; it is probable that the total production of the country will closely approach that of 1932.

Crop condition in French North Africa up to the end of April was very satisfactory, but subsequently, damage was caused by severe scirocco. In Egypt yields are forecast to exceed the average.

With respect to sowings of spring cereals, the latter have been effected in delay in several countries of Europe, where germination has, in general, been slow and frost damage has been reported. In the U. S. S. R. the sowings are more advanced than last year. In Canada and the United States, sowings have been somewhat delayed but the weather conditions during the first half of May favoured growth.

In Argentina sowing is proceeding under favourable conditions, whereas in Australia the work has been retarded in various regions by insufficient rainfall.

G. CAPONE.

\* \* \*

*Germany* : The average proportion of the fields abandoned through winter damage was in percentages of area sown, as follows : winter wheat 0.9 (against 1.0 last year) ; winter rye 0.5 (0.5) ; winter barley 0.7 (0.5) ; winter spelt 0.3 (0.9).

At the beginning of May condition of winter spelt, according to the system of the country, was 2.5 (as at the beginning of April 1933) against 2.7 at the beginning of May 1932.

Due to the cold dry weather that prevailed in April and especially to the night frosts in the latter half of the month, growth was everywhere backward. Condition of winter crops was in many cases considered less favourable than a month previously.

The dry weather of April favoured preparations for spring crops. The young crops that had already sprouted suffered from the night frosts.

*Austria* : In the first decade of April sporadic rains were reported but the amount of precipitation was below average so that it did not compensate for the unfavourable effects of the lack of moisture in winter. Temperatures during the period were rather low. Morning frosts were reported here and there. Toward the middle of April temperatures began to rise. At the beginning of the third decade the cold was so pronounced that snow fell in the Central Alps.

The growth of winter sowings has been severely checked by the cold winds and they are very backward. Winter wheat is developing very slowly and is infested with weeds, especially in sparsely-sown fields. Sowings of winter rye are vigorous but also backward. Development of winter barley is fairly good.

Preparations for sowings of spring cereals have been considerably lengthened. At the end of April spring sowings had not everywhere been terminated save for spring barley. Germination has been slow but sufficiently uniform. Spring barley has yellowed somewhat following on night frosts.

*Belgium* : The month of April was marked by dry, cold weather with a predominance of north and northeast winds. Towards the middle of the month some night frosts occurred. After the 23rd temperatures became milder and some beneficial rains fell. Complaints are made of drought, especially on light lands or those with shallow top soil.

The dry weather has favoured field work and tillage, which have proceeded actively in good conditions. Growth, however, has been delayed.

In general, winter cereals look well but tillering is not advanced. The oat sowings have come up normally.

*Bulgaria* : Due to the cold weather in the first half of the month sowings of spring crops have been late. The abundant rains in the latter half of the month, however, greatly favoured growth of both winter and spring crops.

The area of meslin in 1933 is 232,000 acres against 222,000 in 1932 and 244,000 on the average for the preceding quinquennium; percentages: 104.6 and 95.1.

The area sown to spelt is 23,500 acres against 36,900 in 1932 and 24,700 on the average for the preceding quinquennium, percentages: 87.2 and 94.9.

*Spain* : During April the weather conditions remained favourable to winter cereals. Although during the latter part of the spring, the weather conditions were not quite unfavourable, production is forecast not to be considerably below that of last year, which was rather larger than a normal crop owing to the slightly smaller area than in the previous year.

*Estonia* : This year the snow began to melt earlier than usual but white frosts lasted until the beginning of May.

*Irish Free State* : The first three weeks of April were dry and summerlike ; the last week was showery but mild. Cereal crops were sown under excellent soil and weather conditions. No damage was reported from any cause.

*France* : The rains that fell almost everywhere in the latter half of April and towards the end of the first week of May removed preoccupations due to the persistent drought ; after the low temperatures, accompanied by frosts, that characterized the third week of April the weather again became warmer much to the benefit of the crops.

The cultivational situation of wheat is on the whole very satisfactory and prospects are good and sometimes even very good. Though some bare fields are still reported and in some districts, particularly in the southwest, yields already appear not to reach those of last year in the principal areas of production, as in the centre and north, condition of wheat at the beginning of May gave hope of high yields despite some damage on light lands. The drought in the southeast however, seems to have somewhat compromised hard wheats since, owing to the more advanced stage of vegetation the rains arrived rather too late ; no yellowed or bare fields are reported.

Condition of oats is less satisfactory as they have suffered more from drought, which hindered sprouting of spring crops, and from the frosts at the end of April.

Generally the drought has somewhat compromised the sprouting of spring cereals.

Rye is in general sparse owing to poor tillering and flowering took place in cold weather so that shedding was prevalent. The crop appears mediocre. The crops are so far free from weeds.

*Great Britain and Northern Ireland* : Fine, dry weather continued during the first fortnight in April in England and Wales but was followed by cold, east winds with some snow in parts of the country and ground frosts at night. During the last week of the month, however, the temperature rose and there were some useful showers. The growth of autumn sown crops was checked somewhat by the cold nights and absence of rain during the first three weeks of the month but with the advent of the warm rain, there was noticeable improvement, the crops looking healthy and promising. Germination of spring sown cereals has been good and the plants generally look well.

In Scotland, beneficial rain fell at the end of April ; the crop is strong and healthy. Seeding of barley and oats was carried out under ideal soil and weather conditions and germination was strong and uniform. Little or no damage by frost or insect pests was reported.

In Northern Ireland the weather during April was mainly dry with, however, unsettled conditions and some ground frosts at night after the 18th ; these conditions on the whole favoured seasonal work. Wheat and oats have braided well and look promising ; some reports of damage to oats by frost and grubs was reported. An increase in the wheat area and a decrease in that of oats are expected.

*Greece* : In the greater part of the country conditions are excellent and a good crop may be expected if the weather remains favourable. Only a few districts have experienced significant losses.

*Hungary* : During the last week of April, the temperature began to rise gradually ; from 10° C. at the beginning of the week, it reached 20° C. on April 29 and later touched 25° C. The night temperature was rather low. During the three weeks from April 22 to May 12, the quantity of precipitation was much above the average in most regions of the country.

Hail damage was reported in three departments.

## Area and Crop Condition.

COUNTRIES	AREA SOWN					CROP CONDITION (†)								
	1932-33	1931-32	Average 1926-27 to 1930-31	% 1932-33										
				1931-32 = 100	Aver. = 100	I-V-1933			I-IV-1933			I-V-1932		
								a)	b)	c)	a)	b)	c)	a)
Thousand acres														
WHEAT.														
w) Winter crop.														
s) Spring crop														
Germany . . . .	4,947	4,883	4,016	101.3	123.2	2.7	—	—	2.7	—	—	2.8	—	—
*Austria . . . .	(w) ...	514	486	...	...	2.3	—	—	2.2	—	—	2.8	—	—
Belgium . . . .	(s) ...	23	25	...	...	2.1	—	—	—	—	—	—	—	3.1
Bulgaria . . . .	(w) ...	366	383	406	95.5	90.0	—	—	—	—	—	—	—	—
Spain . . . . .	(w) ...	3,002	3,078	2,841	97.6	105.7	110	—	—	—	—	125	—	—
Finland . . . .	(w) ...	11,047	11,249	10,880	98.2	101.5	115	—	110	—	—	—	—	—
France . . . . .	(w) ...	34	32	26	106.0	127.2	106	—	106	—	—	—	—	—
*Scotland . . . .	(w) ...	12,864	12,894	12,765	99.8	100.8	—	—	—	—	—	—	—	—
Greece . . . . .	(w) ...	52	56	...	...	105	—	—	100	—	—	100	—	—
Italy 2) . . . .	(w) ...	1,679	1,496	1,338	112.2	125.5	—	—	—	—	—	—	—	—
Latvia . . . . .	(w) ...	12,365	12,076	11,938	102.4	103.6	—	—	—	—	—	—	—	—
Lithuania . . . .	(w) ...	153	175	194	87.2	78.6	120	—	97	—	—	106	—	—
Luxemburg . . . .	(w) ...	389	420	310	92.6	125.6	2.5	—	2.5	—	—	2.6	—	—
*Netherlands . . . .	(w) ...	30	22	28	136.7	107.4	—	—	—	—	—	79	—	—
*Poland . . . . .	(w) ...	293	150	...	...	3.3	—	—	3.4	—	—	—	—	2.9
*Rumania . . . .	(w) ...	3,886	3,468	...	...	...	—	—	—	—	—	—	—	—
*Sweden 5) . . . .	(w) ...	6,083	5,886	...	...	...	—	—	—	—	—	—	—	—
*Switzerland . . . .	(w) ...	568	544	...	...	...	—	—	—	—	—	—	—	—
*Soviet Union . . . .	(w) ...	184	159	...	...	...	—	—	—	—	—	—	—	—
Czechoslovakia . . . .	(w) ...	128	123	...	...	...	—	—	96	—	—	99	—	92
Yugoslavia . . . .	(w) ...	2,130	1,997	1,866	106.7	114.1	2.6	—	—	—	—	2.8	—	3.0
U. S. S. R. . . . .	(w) ...	115	95	90	121.1	127.6	2.8	—	—	—	—	—	—	—
Total Europe . . . .	(w) ...	5,157	5,139	4,940	100.3	104.4	—	—	—	—	—	—	—	—
Canada . . . . .	(w) ...	28,058	32,337	22,107	86.8	126.9	—	—	—	—	—	—	—	—
United States . . . .	(w) ...	54,460	54,112	51,758	100.6	105.2	—	—	—	—	—	—	—	—
Total America . . . .	(w) ...	82,518	86,449	73,865	95.5	111.7	—	—	—	—	—	—	—	—
India . . . . .	(w) ...	514	536	772	95.9	66.6	—	—	95	—	—	—	100	—
*Japan . . . . .	(w) ...	25,171	26,646	23,815	94.5	105.7	—	—	—	—	—	—	—	—
Syria and Lebanon . . . .	(w) ...	27,096	33,656	39,312	80.5	68.9	—	—	66.7	—	—	59.4	—	75.1
Total Asia . . . . .	(w) ...	20,986	21,521	20,175	97.5	104.0	—	—	—	—	—	—	—	—
Algeria . . . . .	(w) ...	73,767	82,359	84,074	89.6	87.7	—	—	—	—	—	—	—	—
Cyrenaica . . . . .	(w) ...	32,293	33,669	31,282	95.9	103.2	—	—	—	—	—	—	—	—
Egypt . . . . .	(w) ...	1,076	1,247	1,201	...	...	—	—	g) ...	—	—	f) ...	—	—
French Morocco . . . .	(w) ...	1,076	1,191	1,182	90.4	91.0	...	...	...	85	102	—	—	—
Tunis . . . . .	(w) ...	33,369	34,860	32,464	95.7	102.8	—	—	—	—	—	—	—	—
Algeria . . . . .	(w) ...	3,707	3,703	3,718	100.1	99.7	—	100	—	115	—	—	—	85
Cyrenaica . . . . .	(w) ...	13	6	23	234.0	59.7	—	—	—	—	—	—	—	—
Egypt . . . . .	(w) ...	1,467	1,762	1,606	83.3	91.4	104	—	101	—	—	107	—	—
French Morocco . . . .	(w) ...	2,817	2,713	2,695	103.8	104.5	—	—	—	—	—	120	—	—
Tunis . . . . .	(w) ...	1,779	2,392	1,802	74.4	98.7	—	—	—	—	—	—	—	—
Total Africa . . . .	(w) ...	9,783	10,576	9,844	92.5	99.4	—	—	—	—	—	—	—	—
GRAND TOTAL . . . .	(w) ...	171,379	181,907	178,140	94.2	96.2	—	—	—	—	—	—	—	—
	(n) ...	199,437	214,244	200,247	93.1	99.6	—	—	—	—	—	—	—	—

COUNTRIES	AREA SOWN					CROP CONDITION (†)								
	1932-33	1931-32	Average 1926-27 to 1930-31	% 1932-33										
				1931-32 = 100	Aver = 100	I-V-1933			I-IV-1933			I-V-1932		
						Thousand acres			a)	b)	c)	a)	b)	c)
RYE.														
w) Winter crop. s) Spring crop.														
Germany . . . w)	10,991	10,830	11,248	101.5	97.7	2.9	—	—	2.6	—	—	—	—	—
*Austria . . . { w) ... s) ...	901	901	887	...	...	2.1	—	—	2.0	—	—	2.6	—	—
Belgium . . . w)	551	562	565	98.0	97.6	2.2	—	—	—	—	—	2.6	—	—
Bulgaria . . .	526	544	549	96.8	95.9	120	—	—	—	—	—	2.4	—	—
Spain . . .	1,458	1,516	1,588	96.2	91.8	115	—	—	110	—	—	—	—	—
Finland . . .	560	544	538	103.0	104.1	103	—	—	103	—	—	—	—	—
France . . .	1,859	1,791	1,954	103.8	95.1	—	—	—	—	—	—	—	—	—
Greece . . .	170	180	142	94.1	119.5	—	—	—	—	—	—	—	—	—
*Latvia . . . w)	652	593	—	110.0	—	125	—	—	—	—	—	—	—	—
Lithuania . . . w)	1,182	1,186	1,167	99.7	101.3	106	—	—	—	—	—	—	—	—
Luxemburg . . .	20	17	18	114.3	111.9	2.3	—	—	2.3	—	—	113	—	—
*Netherlands . . .	407	476	—	...	...	—	—	1) 65	—	—	—	2.3	—	—
*Poland . . . w)	13,887	14,046	—	...	...	3.2	—	—	3) 36	—	—	1) 72	—	—
*Rumania . . . w)	726	717	—	101.4	—	—	—	—	—	—	95	3) 3.1	—	—
*Sweden s) . . . w) ... s) ...	533	501	—	106.2	—	—	—	—	—	—	—	—	—	—
Switzerland . . .	14	12	—	109.8	—	—	—	—	—	—	—	—	—	—
*Switzerland . . .	46	48	—	...	...	—	—	96	—	—	98	—	—	97
Czechoslovakia . . .	2,245	2,585	2,545	86.9	88.2	a) 2.9	—	—	—	—	—	a) 2.6	—	—
Yugoslavia . . . w)	530	511	479	103.7	110.6	—	—	—	—	—	—	—	—	—
U. S. S. R. . . .	63,007	64,402	64,292	97.8	98.0	—	—	—	—	—	—	—	—	—
Total Europe . . . (m) (n)	20,092 83,099	20,266 84,668	20,793 85,085	99.1 98.1	96.6 97.7	—	—	—	—	—	—	—	—	—
Canada . . . w) s)	6) 454 8) 146	7) 614 7) 160	7) 704 7) 256	74.0 91.3	64.5 57.1	—	—	89	—	—	—	—	—	94
United States . . .	6) 2,854	7) 3,271	7) 3,254	87.3	87.7	—	—	—	—	—	—	—	—	83.2
Total America . . .	3,454	4,045	4,214	85.4	81.9	—	—	—	—	—	—	—	—	—
Algeria . . . . .	4	5	4	68.8	95.4	—	100	—	115	—	—	—	—	85
GRAND TOTAL . . . (m) (n)	23,550 86,557	24,316 88,718	25,011 89,303	96.9 97.6	94.2 96.9	—	—	—	—	—	—	—	—	—
BARLEY.														
w) Winter crop. s) Spring crop.														
Germany . . . w)	618	607	477	101.7	129.6	2.8	—	—	2.7	—	—	—	—	—
*Austria . . . { w) ... s) ...	18	21	—	...	...	2.3	—	—	2.3	—	—	2.8	—	—
Belgium . . . w)	398	376	—	...	...	2.3	—	—	—	—	—	2.8	—	—
Bulgaria . . . w)	79	78	72	101.2	109.2	—	—	—	—	—	—	2.4	—	—
Spain . . .	576	568	601	101.3	95.8	120	—	—	—	—	—	120	—	—
France . . .	4,521	4,837	4,516	93.5	100.1	115	—	—	110	—	—	—	—	—
Greece . . . w)	412	432	412	95.2	99.9	—	—	—	—	—	—	—	—	—
Luxemburg . . .	558	574	481	97.3	116.0	—	—	—	—	—	—	—	—	—
*Netherlands . . .	8	10	9	82.5	86.6	2.5	—	—	2.4	—	—	2.4	—	—
*Netherlands . . .	50	72	—	...	...	—	—	4) 68	—	—	—	4) 74	—	—
*Poland . . . w)	102	166	—	...	...	—	—	3.0	3) 3.3	—	—	90	—	2.9
*Rumania . . . w)	170	248	—	68.8	—	—	—	—	—	—	90	—	—	—
*Switzerland . . .	18	16	—	...	...	—	—	97	—	—	90	—	—	93
Czechoslovakia . . .	1,642	1,762	1,766	93.2	93.0	s) 2.8	—	—	—	—	—	s) 2.4	—	—
Yugoslavia . . . w)	579	609	592	95.1	97.8	—	—	—	—	—	—	—	—	—
U. S. S. R. . . . w)	711	872	1,009	81.6	70.5	—	—	—	—	—	—	—	—	—
Total Europe . . . (m) (n)	8 993 9,704	9 477 10 349	8 926 9,935	94.9 93.8	100.8 97.7	—	—	—	—	—	—	—	—	—

COUNTRIES	AREA SOWN					CROP CONDITION (†)								
	1932-33	1931-32	Average 1926-27 to 1930-31	% 1932-33										
				1931-32 = 100	Aver. = 100	I-V-1933			I-IV-1933			I-V-1932		
						Thousand acres								
						a)	b)	c)	a)	b)	c)	a)	b)	c)
Canada . . . . .	8) 3,696	7) 3,758	7) 4,728	98.4	78.2	—	—	—	—	—	—	—	—	—
United States . . .	8) 12,971	7) 13,213	7) 11,947	98.2	108.6	—	—	—	—	—	—	—	—	—
Total America . .	16,667	16,971	16,675	98.2	100.0	—	—	—	—	—	—	—	—	—
*Japan . . . . .	...	2,107	2,198	...	...	—	—	g)	—	—	f) g)	—	f)	—
Syria and Lebanon	702	794	824	88.4	85.2	...	...	...	—	—	85	102	—	—
Total Asia . . .	702	794	824	88.5	85.2	—	—	—	—	—	—	—	—	—
Algeria . . . . .	3,188	3,279	3,432	97.2	92.9	—	100	—	115	—	—	—	—	85
Cyrenaica . . . . .	71	49	88	146.0	80.6	—	—	—	—	—	—	—	—	—
Egypt . . . . .	287	366	359	78.4	80.0	101	—	—	101	—	—	105	—	—
French Morocco . .	3,410	3,298	3,008	103.4	113.4	—	—	—	—	—	—	e)	—	—
Tunisia . . . . .	865	1,507	1,197	57.4	72.2	—	—	f) g)	—	—	—	—	—	—
Total Africa . . .	7,821	8,499	8,084	92.0	96.7	—	—	—	—	—	—	—	—	—
GRAND TOTAL. (m)	34,183	35,741	34,509	95.6	99.1	—	—	—	—	—	—	—	—	—
(n)	34,894	36,613	35,518	95.3	98.3	—	—	—	—	—	—	—	—	—
OATS.														
*Austria . . . . .	...	784	759	...	...	2.4	—	—	—	—	—	2.5	—	—
Bulgaria . . . . .	306	281	330	108.9	92.9	120	—	—	—	—	—	130	—	—
Spain . . . . .	1,599	1,926	1,926	83.0	83.0	115	—	—	—	100	—	—	—	—
France . . . . .	2,156	2,205	2,105	97.8	102.4	—	—	—	—	—	—	—	—	—
Greece . . . . .	332	367	293	90.4	113.2	—	—	—	—	—	—	—	—	—
Luxemburg . . . . .	69	74	72	93.3	95.0	2.5	—	—	2.2	—	—	2.4	—	—
*Switzerland . . . .	...	41	49	...	...	—	—	96	—	—	—	—	—	98
Czechoslovakia . . .	2,011	2,027	2,078	99.2	96.7	2.9	—	—	—	—	—	2.6	—	—
*Yugoslavia . . . .	73	87	—	83.2	—	—	—	—	—	—	—	—	—	—
Total Europe . . .	6,473	6,880	6,804	94.1	95.1	—	—	—	—	—	—	—	—	—
Canada . . . . .	8) 13,250	7) 13,148	7) 12,997	100.8	101.9	—	—	—	—	—	—	—	—	—
United States . . .	8) 40,003	7) 41,224	7) 39,590	97.0	101.0	—	—	—	—	—	—	—	—	—
Total America . .	53,253	54,372	52,587	97.9	101.3	—	—	—	—	—	—	—	—	—
Syria and Lebanon	28	28	35	101.8	80.6	...	...	...	—	—	85	—	100	—
Algeria . . . . .	526	504	592	104.4	88.9	—	100	—	115	—	—	—	—	85
French Morocco . .	64	60	83	114.5	77.4	—	—	—	—	—	—	—	—	—
Tunisia . . . . .	74	86	103	85.7	71.7	—	—	f) g)	—	—	—	e)	—	—
Total Africa . . .	664	650	778	102.7	85.4	—	—	—	—	—	—	—	—	—
GRAND TOTAL . . .	60,418	61,930	60,204	97.6	100.3	—	—	—	—	—	—	—	—	—

\* Countries not included in the totals. — a) Above the average. — b) Average. — c) Below the average. — d) Very good. — e) Good. — f) Average. — g) Bad. — h) Very bad. — m) Not including U. S. S. R. — n) Including U. S. S. R. — †) See explanation according to the various systems, page 291. — x) Average 1926-27 to 1929-30. — a) The figures for 1932-33 and 1931-32 have been calculated taking into account the results of the new agricultural survey. — 3) Average 1928-29 to 1930-31. — 4) About the middle of the previous month. — 5) Provinces of Svealand and Götaland. — 6) Area expected to be harvested. — 7) Area harvested. — 8) Area to be planted according to farmers' intentions.

The winter wheat crop looks well in the Danubian area and in some of the great plain regions. In the western regions and in some of the great plain regions its growth is backward due to cold weather in April. It did not begin to grow well until the milder weather set in during May. In 5 departments damage to wheat by insects is reported. Winter rye has also been affected by the cold weather in April and has rather short straw. It is believed that the rainfall towards May 10 will have a good influence on future growth. Winter barley is growing fairly well.

As regards spring cereals, the crops have sprouted regularly but the rather cold April weather has retarded their growth. After the recent rains and mild weather during May, growth is expected to be more rapid and vigorous.

Towards May 12, the crop condition of wheat and rye was below the average.

*Italy* : During the first half of April the temperature rose considerably; towards the middle of the month fairly abundant rains fell. During the latter half of the month the temperature fell below the normal average and was accompanied by abundant snowfall and hoar frost. The rains which also fall during this period have favoured wheat, which has been damaged, however, by frost in some areas of northern and central Italy. Early varieties suffered most because they had already reached the critical stage of growth.

*Latvia* : During April it was in general fairly cold and during the whole of the month the temperature remained below the normal. During the first ten days some snow fell and remained for a few days. Throughout the month some night frosts occurred, with a resulting influence on winter cereals. According to correspondents' reports however, the crop condition of winter wheat on May 1 was average in 33.9 % of the cases, above the average in 60.0 % and below the average in 6.1 %. The corresponding figures for winter rye are : 27.4 %, 68.9 % and 3.7 %.

*Lithuania* : In April it was cold with temperatures of 2° and white frosts. The weather conditions were unfavourable for the crops and for field work.

*Luxemburg* : The generally cold, dry weather during April checked the normal growth of the crops.

*Poland* : The crop condition of winter cereals on 15 April had deteriorated a little compared with that as on 15 March of this year. This deterioration is, in large part, due to lack of warmth and sunshine reported in 84 % of the correspondents' replies. There was still no lack of soil moisture during the period considered because the melting of the snow furnished adequate moisture. Only in the departments of Cracow, Lodz, and Kielce was soil moisture insufficient.

Some damage to winter crops by night frosts was reported in the following five departments: Bialystok, Pomorze, Kielce and Warsaw.

Due to unfavourable weather, the growth of winter crops was backward according to 56 % of the correspondents.

In most of the country, the spring cereal sowings began at a normal date.

According to data furnished by the small number of correspondents of the Central Office of Statistics, crop condition of winter wheat did not change during the period 15 April to 5 May whereas that of rye and winter barley deteriorated. In fact, crop condition was as follows :

	5 May 1933	15 April 1933	5 May 1932
Winter wheat . . . . .	3.3	3.3	2.9
Winter rye . . . . .	3.2	3.4	3.1
Winter barley . . . . .	3.0	3.2	2.9



The deterioration of crops was increased by lack of soil moisture as well as by sun and heat.

The lack of moisture was experienced until May. Despite the milder weather at the beginning of May, the condition of winter crops has not improved.

*Portugal* : The excessive winter rains, especially in low-lying regions, have caused considerable damage to the wheat crop; growth in more elevated regions and on permeable lands was luxuriant at the end of the winter. Unfavourable weather in April destroyed the hope of an abundant crop; on May 1 the crop condition of wheat in the large producing centres was considered to be unsatisfactory because lack of moisture hindered the normal growth of the crops. After May 1, however, rainfall largely improved the situation so that the wheat crop may now exceed the average, especially as the area sown, although smaller than that of last year, is larger than has been sown to wheat in preceding years.

Rust, which has already made an appearance in places, has not caused any noteworthy damage. As regards the other cereals, the rain has not brought about any considerable improvement as growth was already advanced.

*Rumania* : During the first ten days of May the weather was changeable. More or less abundant rains were recorded in all departments. Temperatures began to rise but remained below the average.

Owing to cold weather in the first months of spring, the growth of winter cereals is very backward. Damage by cold has, so far, not been large. Soil moisture is sufficient and sometimes even too abundant.

At the end of the first ten days of May, the wheat, rye and winter barley crops were in good condition but needed more warmth.

Spring cereal sowings are 15-20 days late

*Switzerland* : In the first fortnight of April growth was satisfactory but in the second fortnight temperatures were predominantly low and conditions were dry with night frosts, circumstances which somewhat delayed growth of winter cereals. Cereals have, however, tillered well and continued to develop satisfactorily. Night frosts had particularly bad effects on winter wheats and ryes sown late on cold and badly exposed lands, which wintered badly. At the beginning of May the rise in temperatures and increase in precipitation improved the situation but not sufficiently to be reflected in the figures of crop condition.

Preparation of the land and spring sowings were carried out early and in favourable conditions. Germination was fairly regular but development of sowings was somewhat delayed by the return of cold conditions in the latter half of April.

Condition of spelt on 1 May 1933 was, according to the system of the Institute, 96 against 98 on 1 April 1933 and 94 on 1 May 1932; meslin was 97 (98, 94).

*Czechoslovakia* : Cereals have wintered well thanks to the small quantity of precipitation, fairly mild temperatures and a shallow snow-cover, with the result that in March their crop condition was good. March weather was extremely warm and dry, permitting an early start of the usual field work and spring cereal sowings, which were finished in low-lying regions before the end of the month. The growth of cereals, which had given rise to hopes of a good crop, was retarded by unfavourable weather in April which, especially during the latter half, was very dry and cold with frequent night frosts.

Due to the persistence of cold weather, lack of rainfall, and the fact that the sub-soil could not store up enough moisture in the autumn and winter, during which pre-

precipitation was very moderate, the growth of cereals was considerably compromised and was three weeks late. The damage by night frosts was fairly large for spring cereals and winter rye which were sown at an earlier date. The cereal situation is satisfactory, that of wheat being the best. Warmer weather and more abundant precipitation could stimulate growth which, under more favourable conditions would recover rapidly and promise a good crop.

The area under meslin this year is 19,700 acres; 2.9 % above that of last year and 19.4 % below the five-year mean.

*Yugoslavia* : Weather in April was very variable, especially in the first fortnight, with wide oscillations of temperature, frequent rains and, in higher areas, falls of snow. Toward the end of April and the beginning of May warm weather with beneficial showers was re-established.

*U. S. S. R.* : According to data published by the People's Commissariat for Agriculture sowings of all spring crops since 10 April have been as follows :

		Area sown (thousand acres).			
		1933	1932	1931	1930
On 10 April		16,870	5,162	...	27,923
15 "		25,605	8,298	4,497	37,808
20 "		34,227	15,921	8,202	50,657
25 "		40,138	24,694	16,803	68,696
1 May		62,568	37,007	33,735	80,805
5 "		83,807	53,462	60,683	92,913
10 "		105,016	78,400	88,366	108,728
15 "		...	108,194	114,083	124,348
20 "		...	135,393	139,869	139,752
25 "		...	160,154	163,984	157,732
1 June		...	185,658	186,320	172,415
5 "		...	203,709	208,481	180,923
10 "		...	216,757	221,457	196,247
15 "		...	227,246	229,826	207,245
20 "		...	233,501	235,403	213,505
Area planned		234,754	253,040	235,495	229,811
Area actually sown		...	238,460	239,449	214,491

The progress of sowings in 1933 from the beginning of the season to 10 May was more rapid than in 1932 and 1931, due principally to the fact that spring was earlier this year than in the two preceding years. In comparison with 1930 the progress of sowings in 1933, though less rapid on the whole, approaches that of the former year. On 10 May the proportion of the area sown to that planned was as follows: 44.7 % in 1933; 31.1 % in 1932; 35.8 in 1931 and 47.3 % in 1930.

So far the data for separate crops have not been published so that the areas sown to spring cereals and grain legumes are not yet known. This group of crops accounted in 1928 and 1929 for 75 % of the total of all spring crops, 72 % in 1930, 67 % in 1931 and 63 % in 1932. During the current year the percentage should, according to the plan, be raised to 66 %. As regards the importance of the principal spring crops (wheat, rye, barley, oats and maize) it may be said that they represent about four-fifths of the total for spring cereals and grain legumes, the proportion varying from year to year to no appreciable extent. According to the plan these five principal spring cereals should in 1933 attain 80 %, that is, almost the same proportion as in 1932.

To enable a clearer view to be obtained of the position of the five cereals above indicated it seems useful to give in the two following tables respectively the data of areas sown to wheat and rye and those sown to barley, oats and maize.

*Area sown to wheat and rye*  
(thousand acres)

	Winter wheat	Spring wheat	Total wheat	Winter rye	Spring rye	Total rye
1927-28 . . . . .	15,267.9	53,257.4	68,525.3	59,597.3	1,306.2	60,903.5
1928-29 . . . . .	16,196.8	57,263.1	73,459.8	60,328.2	1,286.9	61,615.1
1929-30 . . . . .	23,367.6	57,124.0	80,492.5	68,082.7	1,066.8	69,149.5
1930-31 . . . . .	20,172.9	62,896.4	92,069.3	67,484.7	895.8	68,380.5
1931-32 . . . . .	32,336.7	56,388.3	88,725.0	64,401.5	988.4	65,389.9
1932-33 (plan) . . . . .	36,102.6	57,329.3	93,431.9	63,811.0	988.4	64,799.4
1932-33 (actual) . . . . .	28,058.2	...	...	63,006.9	...	...

The data for winter sowings in autumn 1932 show that for rye, which is practically entirely a winter crop in the U.S.S.R., the figure of the plan has almost been attained and that the 1933 crop will, save for deduction of part actually lost through bad conditions during the past winter, which in fact do not seem to have been exceptionally notable, be carried out on an area only a little below 1932. As regards the prospects for wheat the plan for 1932-33 allowed for a total area of 93,432,000 acres, that is, about 6 % greater than was sown the preceding year, but the area sown to winter wheat was 8,046,000 acres smaller than that planned; for this reason it would be necessary, in order to arrive at the total area allowed for in the plan as above indicated, that the area planned for spring wheat should not only be attained but exceeded by about 14 %. Should this not be realized or should the area under spring wheat attain only the extent planned, the total area under wheat in 1933 would be 85,389,000 acres, that is, 3.4 % below the area sown the previous year.

From the above-indicated table it follows also that the wheat crop of the Union tends to expand somewhat as far as the area under winter wheat is concerned while for spring wheat, which is generally more exposed to the dangers of drought and which suffered greatly in 1932, as in 1931, there has been since 1931 a tendency to reduction or at any rate to stagnation, which is also shown by the figure of the plan for 1933, which was in autumn 1932 fixed at 59,553,000 acres but at the beginning of 1933 was reduced to 57,329,000 acres.

In the preceding years the area sown to spring wheat on 10 May was as follows: 32,537,000 acres in 1932; 31,954,000 acres in 1931 and 31,388,000 acres in 1930. In relation to the figures planned these areas were respectively 50.3 %, 46.2 % and 46.2 % and in relation to the areas finally sown 57.7 %, 50.8 % and 55.0 %.

The forecasts for the other three cereals, barley, oats and maize, which are principally spring crops, are indicated in the following table.

*Area sown to barley, oats and maize*  
(in thousand acres).

	Winter barley	Spring barley	Total barley	Oats	Maize
1927-28 . . . . .	959.5	17,071.5	18,031.0	42,615.4	11,105.6
1928-29 . . . . .	1,060.8	18,917.9	19,978.7	46,656.2	8,754.8
1929-30 . . . . .	999.8	16,791.3	17,791.1	42,428.9	8,685.9
1930-31 . . . . .	870.8	15,983.0	16,853.8	42,496.6	9,742.0
1931-32 . . . . .	872.3	16,086.8	16,959.1	38,528.7	9,083.7
1932-33 (plan) . . . . .	1,260.3	17,569.4	18,829.7	40,278.8	8,900.9
1932-33 (actually sown) . . . . .	709.2	...	...	...	...

If the plan for the sowings of these cereals is carried out, the areas sown to barley and oats will be about 7 % and 4 % larger than in 1932 whereas the maize area will be slightly smaller.

Of the total area sown, 105,016,000 acres, to all spring cereals on 10 May of the current year, 82,478,000 were effected by the *kolkhozi*, 11,547,000 by the *soukhhozi* and 10,991,000 by the individual farms. The *kolkhozi* have carried out the sowing plan to the extent of 50 %, the *soukhhozi* to 46.5 % and the individual farms to 24.2 %.

In the most important cereal producing regions, the plan for the sowing of all spring crops had on 10 May been carried out to the extent of 74.5 % in the Middle Volga region, to 58.4 % in the Lower Volga, to 52.0 % in the North Caucasus and to 51.7 % in Ukraina.

In the last three weeks of April and the first week of May the weather was on the whole favourable to sowing and crops already sown; in some areas, especially in the Northern Caucasus and Ukraina, rainfall somewhat slackened the progress of the sowings.

The crop condition of winter cereals at the beginning of May was considered to be satisfactory.

The figures of production of the different crops during the years 1931 and 1932 have not yet been published. For 1931 the figure of total production of cereals and leguminous grain crops is now available and is compared below with the corresponding data for preceding years.

	(000 lb.)
1931 . . . . .	171,917,000
1930 . . . . .	184,186,000
1929 . . . . .	158,163,000
1928 . . . . .	161,643,000

During the three-year period 1928-1930, production of secondary cereals (*i. e.*, excluding wheat, rye, barley, oats and maize) and leguminous grain crops, represented about 9 % of the total production.

*Canada* : The revised estimate of the winter wheat area sown in 1932 for harvest next summer is 547,000 acres against 568,400 sown in 1931-32 and 894,000, the average for 1926-27 to 1930-31; percentages: 96.2 and 61.2. The preliminary estimate published last November of 496,000 acres sown to winter rye remains unchanged.

According to a telegram of May 12 received from the Canadian Government, the growing season throughout Canada was generally late but recent weather has been favourable for seeding. At the end of April wheat seeding had been completed to the extent of 22 % in Manitoba, 13 % in Saskatchewan and 10 % in Alberta. Generally speaking, the moisture supply is ample but rains will be needed shortly in the areas affected by previous drought.

*United States* : In the week ended on about April 26 general and abundant rains fell in parts of the winter wheat belt, especially in the Southwest. It is reported, however, that, in a great part of the winter wheat States, crop condition was very poor and beyond recovery. Some improvement was noted, however, in Atlantic sections and the Ohio valley. Spring wheat sowing made progress during the week but is over a week late as a result of dry weather. In the following week ended on about May 2 further rains fell in parts of the winter wheat belt but were too late to prevent a large percentage abandonment. The weather was fairly favourable generally in the spring cereals area and sowing was in full swing. The crop condition of winter wheat on May 1 reached a record low level for the month (see cereals Table).

On the basis of crop condition on May 1, production of winter wheat is estimated at 202,491,000 centals (337,485,000 bushels) against 277,291,000 (462,151,000) in 1932 and 372,321,000 (620,536,000), the average for 1927-31; percentages: 73.0 and 54.5. The slight increase on the April estimate of production is due to the improvement in crop condition noted since the beginning of April, which has compensated for the reduction in the estimate of area for harvest as a result of the increased estimate of acreage winterkilled to 32.2 %.

On the basis of crop condition on May 1, production of winter rye is estimated at 17,081,000 centals (30,502,000) bushels against 22,319,000 (39,855,000) in 1932 and 22,608,000 (40,371,000), the average for 1927-31; percentages: 76.5 and 75.6.

The condition of spring wheat improved during the week ended on May 25. The weather was fairly favourable generally.

*India* (Telegram of 15 May): The Punjab Government gives the fourth estimate of wheat production this year at 71 million centals (118 million bushels), an increase of 4 million centals (7 million bushels) on the previous estimate, so that this season's crop is practically the same as that of 1932. The Punjab produces one-third of the total for India, for which the third estimate published at the end of April showed a decrease of about 4 million centals (7 million bushels) on the corresponding estimate of last year. The increase now communicated by the Punjab brings the total for India up to the figure for 1932 apart from subsequent modifications in other producing areas.

*Japan*: At the beginning of May the weather conditions were unfavourable to wheat and barley.

*Palestine*: Climatic conditions during April were generally favourable to crops, which benefited from well distributed light showers, though rainfall was much below normal. In some areas, however, the rainfall has been insufficient to ensure even the return of the seed sown. Elsewhere conditions are variable but on the whole the crop will be far better than was anticipated earlier in the year and total yields are expected to be only 20 to 30 %, below the average. Considerable damage has been caused by rust (*Puccinia graminis*) in many parts of the country. Crop condition as at 1 May was poor to average, both for wheat and barley.

*Syria and Lebanon*: A reduction in yields due to the delay in the rains and to their small amount is feared. In Lebanon drought has compromised crops and caused losses to cereals. The intermittent rains of April appear, however, to have brought appreciable relief.

*Algeria*: Up to the end of April the weather was particularly favourable; the frosts of 22 and 23 April caused only small and very localized damage. From 29 April to 1 May a heavy scirocco caused losses which were all the greater as drought had already begun to be felt in many areas in the interior. An attack of rust affected many crops, particularly where sowing had been early.

The statistics compiled in April appear to indicate a certain decrease in total area sown to cereals, due to a regression in that of barley and that of oats. It must however, be noted that the comparison is made with the final figures of preceding years and that the difference is such that it may be accounted for by statistical errors. If the figures for the same date last year are taken as base it is found that those of the current year are 146,000 acres or 4 % higher for wheat and 35,000 acres or 1 % higher for barley; the figure for wheat is the highest recorded for that date in the postwar years with the exception of 1926. It is, on the other hand, the rule that the figures for May are lower

than the final figures for wheat, a fact regularly verified since 1925 save in 1927, while the difference has in the last five years varied from 3 % to 11 % ; for barley the circumstances are less constant but, while the minus differences, less frequent, are very small (less than 0.3 %), the plus differences vary from 2 % to 6 %.

These facts are in accordance with the supposition that the total area sown is at least equal to that of last year, that devoted to wheat being at least as large as in any year since the war excepting probably 1930. The area under barley, which is practically the same as that of last year tends, however, to decline, as does that of oats.

*Egypt* : During April weather conditions were favourable to maturity of wheat and barley. Harvesting of wheat was started in early-sown areas in Upper-Egypt, where it became general in the early days of May. Maturation is practically over in Lower and Middle Egypt. The yield is expected to be good in Upper-Egypt, but not much above the average in Lower Egypt. Harvesting of barley is over in Upper-Egypt but still in progress in the early as well as in the general cultivations in Middle and Lower Egypt. The yield is expected to be normal

*French Morocco* : Favoured by regular rains cereals had generally a very good appearance at the end of April. A violent storm on 1 May in the plain of Dukhala, a fairly important agricultural region, especially for soft wheat, laid many fields and the following rains caused fears of rust attack. On the whole crop prospects remained good or even very good ; the barley harvest began early in May in the southern and central districts

*Tunis* : Weather conditions in April were more or less favourable according to region. Frosts and drought caused some damage ; in certain centres the cecydomia fly caused some fairly large damage

The condition of crops was average or mediocre and rather inferior to that of last month

*Union of South Africa* : The severe heat and drought during the greater part of March were responsible for the reduced prospects in the main producing areas. In the inland areas the benefits of the scattered rainfall at the commencement of the month were largely dissipated by the severe heat and drought during the latter half. Serious damage has also been caused by stalkborer but the poor rainfall throughout the season and particularly the intense dry heat experienced during January and February is the chief factor responsible for the very low yields expected

*Australia (Telegram of 1 May)* : The area to be sown to wheat this year is estimated to be 2 % smaller than that sown last year. On the basis of this information it may be calculated that the area under wheat will be about 15,300,000 acres against 15,637,000 in 1932-33, a decrease of about 337,000 acres

## MAIZE

*France* : The maize sowings have been generally effected under good conditions ; rain at the end of April was very beneficial to the crops in southern regions and their condition was, on the whole, satisfactory.

*Hungary* : Toward 12 May sowings were almost completed everywhere. With sufficient moisture the crop should require more heat.

*Italy* : The maize sowings, which began in the latter half of April, continued in good conditions during the latter half of the month.

*Rumania* : The cold weather compromised part of the crop at the beginning of April. In some places sowings have been repeated. On wider areas sowings began toward the end of April and were carried on until 10 May.

### Maize.

COUNTRIES	AREA					PRODUCTION							
	1932	1931	Average 1926 to 1930	% 1932 — 1932/33		1932	1931	Average 1926 to 1930	1932	1931	Average 1926 to 1930	% 1932 — 1932/33	
	—	—	—	—	—	—	—	—	—	—	—	—	—
	1932/33	1931/32	1926/27 to 1930/31	1931/32	Average	1932/33	1931/32	1926/27 to 1930/31	1932/33	1931/32	1926/27 to 1930/31	1931/32	Average
	1,000 acres					1,000 cents			1,000 bushels of 56 lbs				
Austria .	143	152	145	97.2	102.4	2,690	2,794	2,508	4,803	4,990	4,479	96.3	107.2
Bulgaria .	1,829	1,682	1,693	108.8	108.0	23,246	19,594	15,239	41,511	34,989	27,212	118.6	152.5
Spain . . .	1,102	1,053	1,044	104.7	105.6	15,280	14,778	13,215	27,286	26,389	23,598	103.4	115.6
France . . .	813	855	843	95.0	96.5	10,037	13,789	9,695	17,924	24,623	17,312	72.8	103.5
Greece . . .	587	618	513	95.0	114.5	4,127	3,499	3,597	7,370	6,248	6,423	118.0	114.7
Hungary . .	2,905	2,720	2,652	106.8	109.6	53,617	33,459	35,897	95,746	59,749	64,102	160.2	149.4
Italy 1) (s)	3,259	3,206	3,515	101.7	92.7	61,906	40,354	52,449	110,546	72,061	93,659	153.4	118.0
Italy 1) (t)	322	244	225	132.2	143.1	4,569	2,553	2,167	8,159	4,559	3,870	179.0	210.8
*Poland . . .	240	243	222	98.7	108.2	...	2,296	1,968	...	4,099	3,515	...	...
Portugal . .	...	939	861	...	...	8,947	9,824	8,217	15,796	17,543	14,673	91.1	108.9
Rumania . .	11,803	11,749	10,851	100.5	108.8	132,123	133,674	101,569	235,934	238,704	181,374	98.8	130.1
Switzerland .	2	3	3	97.1	75.9	60	64	77	106	114	138	93.1	77.1
Czechoslov. .	331	344	347	96.2	95.6	6,819	5,020	5,272	12,176	8,965	9,415	135.8	129.3
Yugoslavia .	6,229	5,901	5,342	105.5	116.6	105,667	70,623	65,918	188,692	126,113	117,711	149.6	160.5
*U. S. S. R. .	9,084	9,741	8,483	93.3	107.1	...	...	69,622	...	...	124,325	...	...
Canada . . .	130	132	159	98.7	81.9	2,832	3,051	3,172	5,057	5,449	5,665	92.8	89.3
U. S. A . . .	107,729	105,301	99,456	102.3	108.3	1,628,505	1,437,691	1,441,278	2,908,045	2,567,306	2,573,710	113.3	113.0
Mexico . . .	7,945	8,346	7,692	95.2	103.3	42,816	47,150	40,990	76,458	84,196	73,196	90.8	104.5
Syria & Leb. .	44	65	120	68.0	37.0	403	730	1,352	719	1,303	2,415	55.2	29.8
Turkey . . .	830	903	772	91.9	107.5	8,267	11,423	8,678	14,762	20,398	15,497	72.4	95.3
Algeria . . .	16	24	24	69.7	68.6	101	133	144	181	238	257	76.2	70.4
Egypt . . .	2,043	2,194	2,066	93.1	98.9	42,593	43,793	42,604	76,060	78,202	76,079	97.3	100.0
Eritrea . . .	7	12	16	33.3	47.6	66	240	97	118	429	174	27.5	67.9
Kenya 3) . .	166	161	199	103.7	83.7	2,763	1,525	2,804	4,933	2,724	5,008	181.1	98.5
Fr. Morocco	856	864	588	99.1	145.8	2,619	3,003	3,213	4,677	5,363	5,737	87.2	81.5
Ital. Somal. .	24	53	39	45.1	61.0	213	521	417	380	931	745	40.8	51.0
Tunis 4) . .	44	45	41	99.0	108.2	121	110	109	217	197	194	110.0	111.3
Argentina (a)	*14,540	*14,468	*12,180	100.5	119.4	—	—	—	—	—	—	—	—
Argentina (b)	9,301	9,431	9,713	98.6	95.8	147,710	164,334	177,537	263,769	293,454	317,031	89.9	83.2
Un. of South Africa 3)	\$6,022	6,026	5,413	99.9	111.2	20,870	30,640	29,137	37,268	54,714	52,031	68.1	71.6
TOTALS . . .	165,428	163,033	154,822	101.5	107.2	2,328,967	2,094,369	2,067,852	4,158,873	3,739,951	3,691,705	111.2	112.7

\* Countries and figures not included in the totals. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production but not those of area are available. — a) Area sown. — b) Area harvested. — s) Spring crop (maggengo). — t) Summer crop (cinquantino). — 1) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 2) Average 1927-30. — 3) European crop. — 4) Maize and sorghum.

*Czechoslovakia* : The area sown this year is 338,000 acres, 1.6 % above that of last year and 3.2 % below the quinquennial mean.

*Yugoslavia* : Weather in April was very variable, especially in the first fortnight, with wide oscillations of temperature, frequent rains and, in higher areas, falls of snow.

Sowings of maize, which were on the whole carried out in favourable conditions, were terminated early in May; the warm weather with light showers, which set in toward the end of April and beginning of May was very favourable.

*United States* : In the week ended on May 17 the weather in the maize belt was generally unfavourable and sowings were delayed.

The condition of the maize crop improved during the week ended on May 25. The weather was fairly favourable generally.

*Algeria* : The heat and drought have checked the growth of the maize sowings and of other summer cereals, which had grown strongly following the regular rains in March and April.

*French Morocco* : The maize sowings were greatly favoured by rain at the end of April and were effected under good conditions.

## RICE

*Italy* : Good conditions for rice sowing continued in the latter half of April.

*India* : Threshing of winter padi continued in Bihar and Orissa in the first part of May. Sowing of the crop to be harvested in the coming autumn was in full swing in Bengal.

*British Malaya* : Yields are stated to have been very satisfactory in Kedah and Province Wellesley; in Krian they have been very good over the southeastern portion of the district but are only moderate over the northwestern portion. In the Temerloh and Bentong Districts of Pahang both total production and unit-yield are computed to be higher than those of last season.

In March preparations began for planting the next crop in Negri Sembilan in the riverine *mukims* of Pahang and in Johore. Hot and fairly dry weather prevailed over most of the Peninsula for the greater part of the month.

*Formosa* : Condition of first crop [rice on 1 May was generally satisfactory in the central and southern sections, except in some parts where rain was lacking. In the northern sections caterpillar attacks were reported.

*French West Africa* : The last season's crop was very good in French Sudan, and very irregular in Haute-Volta according to district. The total production of the two colonies appears to be about the same as that of last year, which was about 220 million pounds, a little over one-fourth of the total production of French West Africa.

Large flights of locusts invaded French Guinea, the principal producer of the group, and spread over the area during the first quarter of the year but energetic counter-measures were taken.

## POTATOES

*Germany* : At the end of April planting of main crop varieties was still in progress.

*Austria* : At the end of April the planting of early potatoes was completed, but germination was slow. Planting of main crop potatoes was about to begin.



*Belgium* : Early potatoes have been damaged by night frosts. In general, the area under this crop will be considerably reduced in favour of pasture, oats and flax.

*Great Britain and Northern Ireland* : In Northern Ireland planting of potatoes had been completed in most areas at the end of April after, on the whole, satisfactory weather during the month. The decrease in area planted will not be so marked as was anticipated owing to the comparative cheapness of seed potatoes.

*France* : Early varieties in Brittany have profited by the rains in the latter part of April ; the first liftings began early in May ; first arrivals reached the markets toward 10 May but were somewhat small. On the other hand, the crop in the south-east was partly compromised by drought.

Plantings of main crop varieties were somewhat delayed by the drought but are generally in good condition ; germination, though somewhat hindered by the drought and cold, profited from the rains at the end of April and is generally satisfactory ; in the South, where the crops were more forward, they suffered some damage from frosts at the end of April.

*Hungary* : Early varieties had already sprouted and were developing well by 12 May.

*Switzerland* : Planting was almost completed by the end of April.

*Czechoslovakia* : The area cultivated to potatoes this year will be about 1,835,000 acres against 1,811,000 in 1932 and 1,774,000 on the average of the five years ending 1931. Percentages 101.3 and 103.4.

*Palestine* : Lifting of early-sown potato crops is concluded. Yields were about 50 % below normal.

*Algeria* : Main crop potatoes have suffered somewhat from the cold and more so from the wet weather, which has given rise to an attack of mildew causing fairly considerable loss in some coastal plantations. The return of dry weather has checked the disease and the condition of crops improved by the end of April but it is possible that the very violent scirocco winds which prevailed on April 30 and May 1 and 2 have caused further damage.

## SUGAR

By the beginning of May sowings had almost been finished in all the European producing countries.

During April weather favoured sowings. Except for some warm, spring days toward the middle of the month the weather was, on the whole, very changeable but cold and drought predominated. These conditions had an unfavourable effect on germination and on the first phase of growth of the young plants. Rainfall in the first few days of May, however, partly restored the situation.

Although the weather in April was not favourable to sugar-beet sowings, it was propitious for field work, which progressed regularly.

In the table of beet areas, changes have been made in the data for Yugoslavia on the basis of a communication from the Sugar Manufacturers' Association, in

those of Bulgaria on the basis of a communication of the General Direction of Statistics, in those of Great Britain according to a communication of the British Sugar Beet Society, in those of Germany according to information cabled by the Sugar Manufacturers' Association and in those of Czechoslovakia according to a communication of the Central Bureau of Statistics.

*Acreage of sugar beet.*

COUNTRIES	1933 *1	1932	Average 1927 to 1931	% 1933	
				1932 = 100	Average = 100
	acres				
Germany. . . . .	680,758	541 025	1,014,242	126	67
Austria . . . . .	109,000	105,500	80,693	103	135
Belgium . . . . .	129,700	132,109	148,720	98	87
Bulgaria . . . . .	27,200	40,237	45,097	68	60
Denmark . . . . .	106,000	93,400	90,842	114	117
Spain . . . . .	200,000	201,488	185,230	98	107
Irish Free State . . . . .	13,600	13,686	13,351	99	102
Finland . . . . .	6,700	5,869	5,283	114	126
France . . . . .	620,000	617,200	644,485	100	96
Great Britain. . . . .	340,000	255,464	244,917	133	139
Hungary . . . . .	105,300	82,124	159,395	128	66
Italy . . . . .	196,000	207,334	267,555	95	73
Latvia . . . . .	32,000	21,323	7,191	151	45
Lithuania . . . . .	8,900	13,141	6,978	68	127
Netherlands . . . . .	119,000	98,999	141,020	120	84
Poland . . . . .	255,800	286,200	498,624	89	51
Rumania . . . . .	98,800	45,420	126,905	218	78
Sweden . . . . .	121,454	100,720	90,593	121	134
Switzerland . . . . .	4,000	3,500	3,390	114	117
Czechoslovakia . . . . .	358,400	360,601	594,327	99	60
Yugoslavia . . . . .	53,047	81,887	124,182	65	43
Total Europe a) . . .	3,585,659	3,307,227	4,493,020	108	80
U. S. S. R. . . . .	3,000,000	3) 3,123,000	2,282,002	95	130
Total Europe b) . . .	6,585,659	6,430,227	6,775,022	102	97
Canada . . . . .	...	45,000	48,273	...	...
United States . . . . .	...	768,000	708,217	...	...
Total North America . . .	—	—	—	—	—
Japan . . . . .	22,151	24,076	23,567	92	94
Turkey . . . . .	55,708	37,383	21,642	149	257
Total Asia . . .	77,859	61,459	45,209	127	172
GENERAL TOTALS . . . ( a)	—	—	—	—	—
( b)	—	—	—	—	—

<sup>a)</sup> Approximate data. — a) Not including U. S. S. R. — b) Including U. S. S. R. — 1) Average 1929 to 1931. — 2) Year 1931. — 3) Harvested area: sown area was 4,038,000 acres.

These new estimates do not differ greatly from those indicated previously. Some of the slight modifications inserted in the table have been made on the basis of data transmitted to the Institute by the " Association Internationale Sucrière de Vienne "; which have been published in a separate table.

For the U. S. S. R., no change has been made in the figures already published last month; it is only known that the sowings at the beginning of May had already been largely effected and had made more rapid advance than in pre-

vious years. In fact, on May 5, 1,413,000 acres had already been sown against 426,000 at the same date of 1932.

With the changes made after the publication of the April Crop Report, it is noted that the area sown to sugar beet in Europe (excluding the U. S. S. R) in 1933 was 8 % larger than that of 1932 but remained 20 % below the average of the preceding quinquennium. Including the U. S. S. R., the area this year will be 2 % larger than that of last year but 3 % below the average.

*Figures supplied by the « Association Internationale  
pour la Statistique Sucrière »*

Countries		Area planted for sugar-beet	
		1933	1932
Germany . . . . .	acres	680,758	acres 541,025
Austria . . . . .	»	112,128	» 106,227
Belgium . . . . .	»	117,740	» 120,483
Denmark . . . . .	»	106,300	» 92,700
Irish Free State . .	»	13,600	» 13,100
Finland . . . . .	»	6,795	» 5,777
Hungary . . . . .	»	105,268	» 82,124
Italy . . . . .	»	196,000	» 185,300
Poland . . . . .	»	253,040	» 283,926
Rumania . . . . .	»	111,200	» 49,400
Sweden . . . . .	»	121,948	» 100,289
Czechoslovakia . .	»	343,047	» 341,623
Turkey (Europe) . .	»	33,360	» 24,700
Yugoslavia . . . . .	»	53,047	» 81,887
Total . . . acres		2,254,231	acres 2,028,559

*Austria* : At the end of April, sugar beet sowings had been nearly completed. Those effected early are beginning to sprout.

*Belgium* : The first beet sowings are coming up normally. The farmers are more and more appreciating the utility of disinfecting the beet seed. The area of the beet crop, which is subject to restriction, will be somewhat reduced.

*France* : The drought and cold weather which prevailed in the North until the end of April, delayed the beet sowings and hindered the sprouting of some beet already sown. The rain which fell during the last week of the month and the warm weather which set in at the beginning of May were, on the contrary, very favourable to the crop.

*Hungary* : Toward 12 May the beets were developing slowly. Insect damage has been reported in several departments ; in two a second sowing has had to be made owing to this and to frost damage.

*Italy* : Sugar beet have sprouted with some difficulty.

*Czechoslovakia* : The sugar beet are coming up very irregularly; those sown early have already sprouted and tillage is about to begin.

*Barbados* : Rainfall in March was about average for the month, weather being thus favourable for harvesting. Young cane was in good condition. By the middle of April reaping was making rapid progress.

*Production of Cane-sugar.*

COUNTRIES	1932-33 1)	1931-32	Average 1926-27 to 1930-31	1932-33 1)	1931-32	Average 1926-27 to 1930-31	Percentages for 1932-33	
	Thousand centals			Short tons			1931-32 = 100	Average = 100
							%	
<b>AMERICA.</b>								
Argentina . . . . .	7,665	7,623	8,758	383,253	381,120	437,919	101	87
Brazil. . . . .	21,385	21,826	19,586	1,070,000	1,090,000	979,281	98	109
Cuba . . . . .	44,093	58,270	96,318	2,000,000	2,913,441	4,815,835	76	46
Ecuador. . . . .	265	504	442	13,000	25,000	22,084	52	60
United States (La) . .	4,019	3,139	2,536	200,900	157,000	126,798	128	158
Guadeloupe . . . . .	551	507	519	28,000	25,000	25,949	109	106
British Guiana . . . .	3,024	3,329	2,696	151,200	166,469	134,774	91	112
Jamaica . . . . .	1,344	1,310	1,304	67,000	65,500	65,181	103	103
Mexico . . . . .	4,718	5,161	4,433	236,000	258,000	221,655	91	106
Paraguay . . . . .	154	185	118	7,700	9,260	5,920	83	130
Peru . . . . .	8,819	8,868	8,690	400,000	443,400	434,506	99	101
Puerto Rico . . . . .	16,326	19,849	14,439	816,295	992,423	721,935	82	113
Dominican Republic . .	9,414	9,579	7,749	471,000	478,931	387,455	98	121
Trinidad and Tobago .	2,240	2,186	1,800	112,000	109,309	90,020	102	124
<i>Total America . . .</i>	<i>124,017</i>	<i>142,336</i>	<i>169,388</i>	<i>5,956,348</i>	<i>7,114,853</i>	<i>8,469,312</i>	<i>87</i>	<i>73</i>
<b>ASIA.</b>								
Formosa . . . . .	15,452	21,805	14,940	772,586	1,090,249	746,981	71	103
India . . . . .	92,991	86,913	67,769	4,650,000	4,345,600	3,388,414	107	137
Japan. . . . .	1,773	2,458	1,932	88,668	122,907	96,620	72	92
Java . . . . .	29,942	57,320	59,818	1,497,089	2,900,000	2,990,857	52	50
Philippine Is. . . . .	23,590	20,944	17,906	1,180,000	1,050,000	895,282	113	132
<i>Total Asia . . . . .</i>	<i>163,748</i>	<i>189,440</i>	<i>162,365</i>	<i>8,188,343</i>	<i>9,508,756</i>	<i>8,118,154</i>	<i>86</i>	<i>101</i>
<b>AFRICA.</b>								
Egypt. . . . .	3,557	3,249	2,209	177,863	162,472	110,463	102	150
Mauritius . . . . .	5,412	3,616	4,952	271,000	180,790	247,577	150	109
Reunion . . . . .	1,197	946	1,073	59,868	47,312	53,643	126	112
Union of South Africa .	7,178	6,518	5,910	358,905	325,900	295,498	110	121
<i>Total Africa . . . .</i>	<i>17,344</i>	<i>14,329</i>	<i>14,144</i>	<i>867,636</i>	<i>716,474</i>	<i>707,181</i>	<i>121</i>	<i>123</i>
<b>OCEANIA.</b>								
Australia . . . . .	12,119	13,148	11,365	605,900	657,400	568,236	92	107
Hawaii . . . . .	20,000	19,960	18,113	1,000,000	998,000	905,655	100	110
Fiji Is. . . . .	3,069	1,786	1,967	153,400	89,300	98,325	172	156
<i>Total Oceania . . .</i>	<i>35,188</i>	<i>34,894</i>	<i>31,445</i>	<i>1,759,300</i>	<i>1,744,700</i>	<i>1,572,216</i>	<i>101</i>	<i>112</i>
<b>GENERAL TOTALS . .</b>	<b>340,297</b>	<b>380,999</b>	<b>377,342</b>	<b>16,771,627</b>	<b>19,084,783</b>	<b>19,866,863</b>	<b>89</b>	<b>90</b>

1) Approximate data.

\*\*\* St. 5 *Ingl.*

*Guadeloupe* : Harvesting of the crop has taken place slowly; the small planters have had great difficulty in selling their cane to the sugar factories; the distilleries have been less active.

*British Guiana* : Weather has been favourable.

*St. Lucia* : A good crop is expected.

*Trinidad* : Precipitation in March was comparatively heavy for the month and transport of cane to the factories was hindered. Conditions were, subsequently, however, drier and good progress was made with harvesting. Growing cane was in good condition. The crop was expected to exceed that of last year.

*Formosa* : Harvesting of cane is almost finished. Growing conditions on 1 May of the cane planted from last summer to this spring were average. The weather is dry but no damage is reported.

*India* : At the end of April grinding was reported to be nearing completion in the United Provinces, the principal producing area.

*Egypt* : Weather during April was on the whole favourable to sowing, germination and growth of sugar cane. Sowing is over in Lower Egypt and some provinces of Upper Egypt. It is practically over in the other localities. Sowing of late-sown areas, hoeing, manuring and watering of early cultivations are in progress. Crop condition as on 1 May: 100, the same as on 1 April and on 1 May, 1932.

*Union of South Africa*: In March the weather was fair throughout the sugar belt but more rain was needed. Precipitation averaged 76.2-101.6 mm. (3-4 inches).

## THE WORLD WINE SITUATION

### *Statistical analysis of the 1932-33 season.*

The production of all the wine-producing countries of the northern hemisphere as well as the trade of the first six months of the current season being now known, it is possible to examine the statistical situation.

The total available supplies were practically the same as at the beginning of last season, the crop having resulted in almost the same quantity of wine; on the other hand it seems that there has been no significant change in the stocks to be carried over. With respect to the average production of the quinquennium 1926-30 there is on the other hand, an increase in production of over 220 million Imperial gallons (264 million American gallons) and stocks themselves are some millions of gallons above the total left on the average by the five seasons of this period.

The production of France above indicated, estimated at about 1,100 (1,300) million gallons, is the total; for countries which give the production of must (Spain, Hungary, Bulgaria, Germany) this has been reduced to the equivalent of wine, using the coefficient  $\frac{9}{10}$ ; the average production of Italy has been increased by about 44 (53) millions and rounded in order to eliminate the difference, of a purely statistical nature, introduced by the correction of the figures for 1931 and 1932 in consequence of the latest cadastral revision.

		millions of gallons		Average
		1932	1931	1926-30
France-Algeria-Tunis . . . . .	Imp.	1,539.8	1,660.8	1,436.4
	Amer.	1,849.2	1,994.5	1,725.0
Major exporters (Spain, Greece, Italy, Portugal) . . . . .	Imp.	1,610.2	1,385.8	1,539.8
	Amer.	1,933.7	1,664.3	1,849.2
Minor exporters (Yugoslavia, Hungary, Cyprus). . . . .	Imp.	160.6	180.4	129.8
	Amer.	192.8	216.6	155.9
Countries neither exporters nor impor- ters (Rumania, Bulgaria) . . .	Imp.	180.4	255.2	173.8
	Amer.	216.6	306.4	208.7
Importers (Switzerland, Germany, Austria, Czechoslovakia, French Morocco) . . . . .	Imp.	83.6	112.2	70.4
	Amer.	100.4	134.7	84.5
Total . . .	Imp.	3,574.6	3,594.4	3,350.2
	Amer.	4,292.7	4,316.5	4,023.3

While the apparent volume of supplies is very much above normal, it must be taken into account that many of the wines produced in some of the most important viticultural regions of France, Italy and Spain have an abnormally low alcoholic content with the result that the real volume of the crop, reckoned in degree-gallons is some millions of gallons less than that of the 1931 crop and the difference with respect to the average must be decreased by this amount. Part of these weak wines will not even enter into trade and will be absorbed by family consumption; those that are sold are greatly modified by mixture with wines of higher alcoholic content or with concentrated musts. This abundance of weak wines leads in addition, for several reasons, to a decrease in quantity of press-wine and piquette produced on the farm for family consumption and usually adding to the volume of supplies.

If account is further taken of the fact that 66 (79) million gallons are immobilized on holdings in France and Algeria the conclusion is reached that the real volume available for trade is distinctly below that existing at the beginning of 1931-32 although appreciably above the average quantity commercially available during the period from 1926-27 to 1930-31.

When commercial consumption is considered it may be stated that it has on the whole continued to decrease during the first six months of the current season.

In France and Italy the fiscal statistics show a slight decline. In France, where the last three seasons were marked by a recovery in commercial consumption following on the sharp fall of 1927-28 and 1928-29, there is a very distinct decline from the opening of the current season; not only is the total quantity subject to turnover taxes 16,938,113 (20,341,152) gallons below that in the first six

months of 1931-32 but, the most marked phenomenon of all, consumption during each of these six months is smaller than that in the corresponding month of last season.

For Italy the data are less complete; the monthly fiscal statistics give only quantities subject to the consumption tax in a certain number of communes (old communes formerly called *fermées*, for which the octroi was suppressed only from 1 April 1930) which represent 58-59 % of the total quantity taxed. In the five months from October 1932 to March 1933 a slight diminution in the incomplete quantity estimated in the fiscal statistics, already noticeable in the last quarter of the preceding season; though still very small, this diminution appears to confirm the decline in consumption revealed for some time by the slackness in commercial movement that followed the regular increase of 1928, 1929 and 1930.

For Spain and Portugal, as for the viticultural countries of Danubian Europe, there are no statistics permitting an evaluation of real consumption any more than of its variations so that it is impossible to state precisely whether this has continued to decrease in the course of the present season but it may be affirmed that it is both under the normal level, as in Spain and Portugal, and under that necessary to absorb the supplies provided by normal increase in production, as in the Danubian countries.

In the majority of countries relying on imports for the whole or the greater part of their consumption a further decline has occurred; the only countries where consumption seems to have been maintained at the same level as last year are the United Kingdom, of which the imports are greater in the first half-year than in the same period of last season, and Switzerland, where the poor crop has led to an appreciable increase in imports; in all the other countries imports have fallen, in Belgium by 10 %, in Austria by 60 %, in Germany by about one-fifth, and in Czechoslovakia, the Netherlands and the group of minor importers (Sweden, Denmark, Norway, Poland) by from one-fourth to one-third.

On the whole the total imported by the eleven deficit or non-producing countries during the first six months of the season is over 21,998 (26,417) gallons or 6 % below the total of the same period in 1931-32; there is every reason for believing that this decline will be somewhat accentuated in the second semester and that the present season will be characterized by a further restriction of imports; the total should be about 66 (79) million gallons, very probably below that of last season, which was 70.4 (84.5) million gallons; the average of the preceding five years was 94.6 (113.6) million gallons.

As regards the slackening of restrictions on import trade in the importing countries as a whole the most important has been the reopening of the French market to foreign wines following on the commercial agreements with Portugal, Spain and, quite recently, Italy, which in various ways remove to a greater or less extent some of the obstacles to the entry of wines from these countries into France. There remains a limitation for ordinary wines through the contingents, previously established, of 39,600,000 (47,600,000) gallons for Spain, 11,400,000 (13,700,000) gallons for Italy, 3,300,000 (4,000,000) gallons for Portugal and 7,100,000 (8,600,000) gallons for Greece; besides the various obstacles so main-

tained there must be taken into account the fact that the customs duty of 84 francs minimum tariff is greater than the difference between many foreign wines of ordinary type at their place of origin and many French wines. Despite these restrictions the entries into France of Greek, Portuguese and especially Spanish wines very appreciably augmented during the first six months or since the coming into force of the agreements; if freedom of mixing these wines with French wines as previously was the case for part of the Portuguese wines and seems to have been for Spanish wines, were resed by the French Government the imports from these countries would probably attain the quantities authorized in the contingents for the second semester; the text of the Franco-Italian agreement not yet being known it is not possible to foresee the exact repercussions on the export of these wines, but it must be noted that the agreement is of such a nature as to favour the introduction of fine wines, vins de crû, liqueurs and vermouths.

TABLE I. — *Imports of wine during the first six months of the season.*  
(1 October–30 March).

COUNTRIES	First six months			Season		Proportion imported during the first six months	
	1932-33	1931-32	Average 1926-27 to 1930-31	1931-32	Average 1926-27 to 1930-31	1931-32	Average 1926-27 to 1930-31
(ooo Imperial Gallons)							
France :							
from Algeria and Tunis . . . . .	(191,863)	(138,365)	(116,367)	(259,307)	(181,348)	(53.4)	(48 to 63)
from foreign countries . . . . .	23,955	9,041	33,502	19,974	68,940	45.3	29-39 to 59-61
Switzerland . . . . .	16,190	14,452	15,882	25,517	26,551	56.6	56 to 66
Germany . . . . .	6,241	7,611	11,923	14,254	21,712	53.4	47 to 63
United Kingdom :							
from British countries . . . . .	2,199	1,875	1,518	3,256	2,684	57.4	47 to 62
from foreign countries . . . . .	5,318	4,996	7,435	8,711	12,099	57.3	55 to 68
Belgium . . . . .	—	3,894	5,015	6,291	9,349	61.9	46 to 61
Austria . . . . .	1,109	2,794	4,927	4,729	8,909	59.1	50 to 59
Czechoslovakia . . . . .	—	1,562	3,850	2,574	5,829	60.7	63 to 71
Netherlands . . . . .	990	1,386	2,222	2,332	3,102	59.4	55 to 80
Sweden, Denmark, Norway, Poland . . . . .	1,450	2,024	2,354	3,366	4,356	53.6	50 to 57
Total { Excluding imports into France . . . . .	—	40,586	55,126	71,030	94,591	57.1	54 to 61
Including imports from foreign countries into France . . . . .	—	49,627	88,628	91,004	163,591	54.3	50 to 59
(ooo American Gallons)							
France :							
from Algeria and Tunis . . . . .	(230,410)	(166,163)	(139,746)	(311,405)	(217,782)	(53.4)	(48 to 63)
from foreign countries . . . . .	28,768	10,857	40,233	23,987	82,791	45.3	29-39 to 59-61
Switzerland . . . . .	19,443	17,356	19,073	30,644	31,885	56.6	56 to 66
Germany . . . . .	7,500	9,140	14,318	17,118	26,074	53.4	47 to 63
United Kingdom :							
from British countries . . . . .	2,642	2,245	1,823	3,910	3,223	57.4	47 to 62
from foreign countries . . . . .	6,393	5,997	8,929	10,461	14,529	57.3	55 to 68
Belgium . . . . .	—	4,676	6,023	7,555	11,227	61.9	46 to 61
Austria . . . . .	1,331	3,355	5,917	5,680	10,699	59.1	50 to 59
Czechoslovakia . . . . .	—	1,876	4,623	3,091	7,001	60.7	63 to 71
Netherlands . . . . .	1,189	1,664	2,668	2,800	3,725	59.4	55 to 80
Sweden, Denmark, Norway, Poland . . . . .	1,741	2,430	2,827	4,042	5,231	53.6	50 to 57
Total { Excluding imports into France . . . . .	—	48,739	66,201	85,301	113,594	57.1	54 to 61
Including imports from foreign countries into France . . . . .	—	59,596	106,434	109,288	196,385	54.3	50 to 59



These brief considerations allow it to be forecast that despite the recent denunciation of the Franco-Portuguese agreement the imports of foreign wines into France will attain a total of 55.0 (66.0) million gallons for the whole season though in 1931-32 they attained only 19.8 (23.8) million and on the average of the preceding quinquennium, with large fluctuations, 68.2 (81.9) million gallons (American gallons).

On the whole, as is shown in the following table, the total quantity of imports during the six months 1 October 1932-31 March 1933 considerably exceeds that of the same half-year of 1931-32 while remaining definitely below the average of the period 1926-27 to 1930-31. The total for the season may apparently be established at about 120 million Imperial gallons (145 million American gallons) whereas in 1931-32 it attained only 90 millions (108 millions); this volume of imports will in any case remain, however, considerably below the average level of the period 1926-27 to 1930-31, namely 163 millions (195 millions).

TABLE II. — *Exports of wine from the five main exporting countries during the first six months of the season.*

COUNTRIES	1932-33	1931-32	1930-31	1929-30	1928-29	1927-28	1926-27
(ooo Imperial gallons)							
Spain . . . . .	1) 30,863	20,766	61,021	38,144	56,534	52,508	44,875
Italy . . . . .	10,119	10,647	16,102	11,241	11,417	13,858	12,891
Portugal . . . . .	9,789	6,929	8,997	10,383	—	—	—
Greece . . . . .	11,049	4,094	10,026	16,245	21,885	13,509	17,327
France . . . . .	7,677	9,063	11,109	14,452	15,420	16,388	19,292
(ooo American gallons)							
Spain . . . . .	1) 37,063	24,938	73,281	45,807	67,892	63,058	53,891
Italy . . . . .	12,152	12,786	19,337	13,499	13,710	16,643	15,480
Portugal . . . . .	11,756	8,321	10,805	12,469	—	—	—
Greece . . . . .	13,269	4,916	12,041	19,509	26,282	16,223	20,809
France . . . . .	9,220	10,884	13,341	17,356	18,517	19,681	23,168

1) Exports during the first three months of 1933 were 6,738,000 Imperial gallons (8,092,000 American gallons), i. e., 71 % more than during the first three months of 1932.

It must therefore be noted that the international wine trade has, during this season, recovered a certain activity and a little more elasticity than it had during the preceding season; the smaller supplies seem, on the whole, to have been a little more easily marketed, despite the fluctuations of consumption in most producing and non-producing, exporting and importing countries. Despite this slight improvement, a comparison with the previous five-year period 1926-27 to 1930-31 shows, however, the persistence of the congestion already noted for the season 1931-32; while stocks are definitely above the normal, sales have been considerably reduced.

In order to make clear these conclusions, we shall examine briefly the situation in the various viticultural countries.

In France supplies are very high owing to the very large Algerian production and the recovery of imports; market sales are difficult because of the

fluctuation of trade consumption and the decreased manufacture of alcohol. Of the total French-Algerian production 65 million Imperial gallons (80 million American gallons) are held up under the terms of the law for the compulsory holding of stocks; some millions may be employed for the necessary correction of the relatively numerous wines of low degree. The remaining 395-420 million Imperial gallons (475-500 million American gallons) may be absorbed by family consumption so that the difficult situation of French viticulture will probably not result in a considerable increase of stocks which apparently can hardly exceed the present level.

Italy has available still larger resources as consumption and manufacture of alcohol are also decreasing; the low quality of part of the product of central and southern Italy will also lead to the elimination of a certain portion; the export trade, despite a slight increase in exports to Switzerland and the recovery of entries into France since June result in only very small sales (16-18 million Imperial gallons; 18-20 million American gallons). In contrast to the course of events in France, an increase in stocks must apparently be counted upon, the level of which was not very high at the end of last season; family consumption cannot, it seems, entirely absorb the surplus of production.

Spain, Portugal and Greece, having had average crops and finding some outlet on the French market, should sell their supplies fairly normally despite the fluctuation of home consumption; as regards Portugal, it is nevertheless necessary to take into account a large quantity of stocks of wine destined for export which it is difficult to believe may be completely sold.

The countries of Danubian Europe, Yugoslavia, Hungary, Rumania and Bulgaria have had crops which, though smaller than those of last year, greatly exceed requirements for home consumption. As no large outlet is possessed abroad, the overproduction crisis persists without any possibility of a material reduction by a chance decrease of yields.

As regards the deficit countries, Switzerland, Germany, Austria Czechoslovakia and French Morocco, their imports must vary according to the quantity they produce and their requirements for consumption so that the crisis which, in some of them, affects the viticultural industry, has no specific cause but is the consequence of the general economic crisis.

Summarizing, as the normal consumption of the northern hemisphere does not exceed 3,190 million Imperial gallons (3,830 million American gallons), the last crop has resulted in a surplus of nearly 440 million Imperial gallons (530 million American gallons) unequally distributed amongst the various producing countries but such that the most favoured have largely adequate supplies to meet the requirements of the home trade and foreign demand with the exception of that of the less important group of viticultural deficit countries.

Distillation, which, during the preceding season, furnished some outlet for the production surplus, especially in France and Italy, has greatly decreased during the current season owing to an accumulation of stocks of alcohol brought about by previous overproduction.

The current season will end with high surpluses in all countries and an increase in their total quantity compared with the end of last season. The latter cannot,

however, exceed a certain limit owing to the difficulties of storing and preserving, so that the crisis of over-production, doubled by under-consumption, which is indicated statistically for most of the other agricultural products, by an accumulation of stocks, results, in the case of wine, in an increase of invisible consumption by the producers themselves. This phenomenon, which is clearly marked for France, exists in most viticultural countries of the northern hemisphere.

In the principal countries of the southern hemisphere, the deepening viticultural crisis is, on the contrary, revealed statistically by the accumulation of very large stocks. The only two countries for which figures are possessed, Australia and Uruguay, report that the stocks existing at the end of the season 1932-33 are, in the former, about equal to the amount of production and largely sufficient in themselves to meet the requirements of consumption, whereas in the latter they equal about one half of a normal crop corresponding to the normal consumption.

The few data available on the present crop in the southern hemisphere do not permit even an approximate idea to be obtained of its quantity but it is permitted to state that as no considerable crop loss has been reported in the principal viticultural countries, it will give, together with the existing stocks, a quantity much above requirements for consumption. It must be noted, moreover, that in some of the exporting countries of this hemisphere, such as Australia, exports are decreasing during the present season and the importing countries have a natural and increasing tendency to reduce their imports.

Summarizing, the economic situation for 1932-33 is characterized by an aggravation of the world wine crisis, taking the form, in almost all the countries concerned, of an augmentation of stocks due to the decline in commercial consumption and the increasingly serious disequilibrium between available supplies and commercial requirements. Certain special circumstances, such as the reopening of the French market, may bring relief of a limited nature to the wine trade of various countries but their influence is insufficient to modify substantially the general statistical situation. The very great elasticity of invisible consumption in the principal viticultural countries and a certain possibility of absorption in the distilling industry have so far partly masked the real statistical position ; on the other hand certain countries most affected by the crisis are not, by reason of their as yet rudimentary viticultural development, equipped for stocking the whole excess production, which can be eliminated only gradually according to the size of the new crops. The alcohol industry is itself suffering from overproduction in a number of countries and it is very probable that stocks will at the end of the season in almost all countries, even in the most favoured, reach their maximum production.

P. DE VIGUERIE.

\* \* \*

*Austria* : At the beginning of May crop condition was 2.0 against 1.9 on 1 April 1933 and 2.4 on 1 May 1932.

*Bulgaria* : The area of vineyards in 1933 is 229,000 acres against 222,000 in 1932 and 208,000 on the average for the preceding quinquennium ; percentages : 102.8 and 110.0. The crop condition of vines on May 1 was 120 against 140 at the same date of last year.

*Spain* : Weather in April was on the whole favourable. In the first half of the month in the central and western districts (Old Castile and Estremadura) rainy weather was accompanied by rather low temperatures ; growth was somewhat retarded ; hail and frosts caused some damage but on the whole of little importance. In the second half of the month fine warm weather returned and was carried out in good conditions. Certain provinces of the centre-north (Aragon and Rioja) on the other hand suffered from high temperatures and drought. All the other areas – Eastern and Southern Mediterranean (Catalonia, Murcia and Valencia, Andalusia) and the north-west (Old Castile) – benefited by the very favourable conditions ; precipitation was adequate in March and April and the latter month was fairly fine and warm.

On the whole the viticultural situation in Spain was good at the beginning of May and gave grounds for expecting a fairly large crop.

Markets remain quiet. Sales to France did not stimulate business as they appeared to be restricted by the monthly quota and the legal prohibition of mixing foreign with home wines on the part of French merchants. Negotiations are in progress between the two Governments for the raising of this prohibition and hopes of its cessation have already caused some activity in white wines.

Prices remain generally firm but with a tendency to fall in some areas.

*France* : Severe frosts affected the vineyards toward the end of April, hoar frosts in the South and reductions in temperature by 6° or even 9° in the east-centre, east and some parts of the centre. Damage was very serious in the vineyards affected but as usual localized.

Losses in the southern areas of large production are on the whole small and partly compensated by fairly abundant bunch formation. The departments of Aude and Pyrénées-Orientales are almost free but some vineyards of northern Hérault, Gard, Bouches-du-Rhône and Var were severely affected, without, however, on the whole any appreciable loss. In the Gironne valley the first reports, always rather pessimistic, place the losses at about one-quarter of the crop. In Bordelais and Charentes the losses are small as also generally in the Loire valley.

On the other hand the high-class vines of the east-centre and east have suffered relatively severely though irregularly, drought and wind have limited the damage in many places but the loss is estimated at about one-fifth in Moselle and Alsace, one-fourth in Champagne, one-fourth to one-third in Burgundy ; it is serious in the Charonnais, the Maconnais, the Beaujolais and the Rhône slopes. On the whole the crop of fine wines, small quantitatively but of great value, has suffered severely.

In the same vineyards the first generation of vine moth appears to be large, as well as that of *pyralis*, for the time being stupefied by the cold.

In the southern vineyards, at least in those not attacked by frosts, that is in the majority, the situation is satisfactory ; precipitation has been fairly abundant, in some cases excessive, the cold wind of the week of May checked the expected attack of mildew, oidium has appeared with the warm moist weather in Aude but has not yet spread ; the first generation of endemis seems on the other hand rather numerous.

It is impossible to make any forecast at this period, which is particularly critical but there appears to be still a possibility of a good average crop if not even of a good one, despite the losses experienced.

The trade situation shows no appreciable change. Sales by producers again slackened during April so that the total quantity delivered to the trade by producers in the first seven months of the season is smaller than that of 1930-31. Imports remain, on the contrary, at a high level ; those of April exceed the corresponding figure of April 1932 by about 11 million Imperial gallons (13 million Am. gallons) ; the French-

Italian agreement, partially reopening the French market to Italian wines, should, in future months, further increase the entries of foreign wines, which are at present fairly large, despite a considerable slackening of Portuguese and Greek imports.

Trade consumption continues to decrease ; although it showed a normal recovery in April it remained well below that of the same month in the last four years.

The markets remain extremely calm. The news of frosts has not had much influence on the trade movement. Quotations, which had remained firm, fell in the first week of May for wines of low degree.

*Hungary* : Following the rather cold weather in April, flowering has been hindered and did not become more rapid until May. The growth of vines is satisfactory except in the Tokay region. The spring work has been finished.

*Italy* : The frosts at the end of April have caused fairly large damage to the northern vineyards, particularly in Piedmont ; in the latter region, according to the estimate of the Office of Viticulture and Oenology of Casalmunserato, the loss is about 25 % ; without taking into account that this first estimate may be a little exaggerated, it must be taken into consideration that the Piedmont crop represents only a little over one tenth of the total Italian production and that the loss with respect to the entire crop is consequently small and comes within the range of normal variations caused by more or less favourable weather conditions. Hail has caused some damage in Sicily.

In other regions, conditions have been fairly favourable to the vines despite an abnormal lack of warmth in general for the season, which has somewhat retarded growth ; rainfall has been sufficient ; the fine weather which, on the whole, prevailed during the second and third weeks of April favoured work, which was effected under good conditions. Growth is fairly strong, although a little in delay. Fruit formation is on the whole rather abundant but fairly irregular. In fact, until now crop prospects have been satisfactory. No serious attacks of disease or insects have so far been reported.

Activity on the markets has always been extremely reduced ; a slight tendency toward recovery noted during April in some places was not continued. Consumption remains low and home trade is very restricted. Exports to Switzerland are regular but their volume is fairly limited. Weak wines, which are still abundant everywhere, are constantly offered by producers but are still little in demand and their price shows a slow but fairly regular tendency to fluctuate ; in some provinces, an agreement has been reached between the Federation of Vineyard Proprietors and the distilleries in order to sell the weak wines to the distilleries without limit as to quantity and at fairly advantageous prices ; the generalisation of such agreements, which is greatly hindered by situation on the alcohol market, burdened with heavy stocks, will considerably improve the wine trade. The prices of good quality wines of normal degree remain on the whole fairly firm with, however, a slight tendency to fluctuate.

The recent agreement concluded with France should result in some increase of exports to that country, especially of fine wines, vermouth and liqueurs, the ordinary wines of less than 12° alcoholic content remaining within the limits of the annual quota previously fixed with a minimum customs duty of 84 francs per hectolitre, exceeding the difference at present existing between the prices of wines on the French and Italian markets ; the absence of forecasts concerning the text of the agreement, especially as regards the application of the law regulating the compulsory holding of stocks of wines imported into France and the mixture of French wines with foreign wines nevertheless presents an exact appreciation of the effect the agreement will have on the movement of the export trade to France.

*Luxemburg* : The vine area in 1933 is 3,000 acres against 2,700 in 1932 and 3,300 on the average of 1927-31 ; percentages 109.1 and 90.5.

The damage caused by frost to the buds during the last ten days of April varied from 15 to 45 %.

*Portugal* : The viticultural season has begun in very good conditions ; if cryptogamic disease, against which steps have already been energetically taken, is not particularly intense, an abundant grape crop should be obtained.

*Rumania* : Toward 10 May the vines looked well but growth was backward.

*Czechoslovakia* : The vines have wintered well without untoward incidents and spring work in the vineyards has already been finished.

*Canada* : Production of grapes in Canada in 1932 is estimated at 400,000 centals against 514,000 in 1931 and 443,000 on the average for the years 1926-30 ; percentages : 95.4 and 110.6.

*Palestine* : Conditions of vines in the plains are fair. In the hills the cold damaged some of the young shoots. Considerable damage has been done in the hills also by the grape-bud moth. Crop condition as on 1 May, was average to poor.

*Algeria* : Precipitation in the viticultural regions has been satisfactory. Growth has been vigorous and the beginning of formation of the bunches average. So far there has been no alarming extension of cryptogamic disease.

On 1 May crop condition was average (100)

*Tunis* : Until the end of April, conditions favoured the vines. Flowering took place under good conditions.

On May 1, condition of the vines was good (120).

The total area of vines has, as last year, increased only very slightly, and according to the statistics of April, has passed from 122,500 to 123,200 acres, with a relative increase of only 0.5 % ; in the three years 1928-1931 the Tunisian vineyard area increased by 45,400 acres, or 60 %, and this year's area is still 43.4 % above the five-year average of 1927-1931.

The productive area of 99,000 acres is also the same as in 1931. On the basis of the increase in the total area, calculated as the difference between the area planted and that of vines pulled up during the winters 1928-29 and 1929-30, at least 12,400 acres of young vines should have become productive in 1932 and as much this year. It should consequently be supposed that about 24,700 acres of old vines have been pulled up during the last two winters and replaced by as many young vines, since the area has remained practically stationary. As a result, the Tunisian vineyards at present consist, to the extent of nearly two thirds, of young vines under five years of age.

*Uruguay* : This year's crop appeared in March on the eve of the vintage to be very large, amounting to about 11 (13) million gallons, greatly exceeding not only last year but also all the crops since the war. Supplies at the beginning of the season amounted to 15 (18) million gallons while consumption is 9 (11) million gallons. The Government has nominated a commission to fix the price of grapes and a bill to solve the wine crisis has also been placed before Parliament.

*Australia* : In South Australia, which is by far the most important producing State, heavy rains fell in February. In the unirrigated districts, especially in the vineyards for wine production, damage was very small, as ripening was backward and the

grapes were less sensitive to the rain ; on the whole, there is no substantial reason to change the first estimate given last March. In the irrigated vineyards, for grape production, damage was more severe, and in some of them, currant and sultana yields will be only about half normal.

In Victoria January was rather cool, with little rain, but, on the whole, with the exception of some isolated cases of hail injury and rather more *Oidium* than usual in some of the irrigation areas, grape prospects throughout the State were excellent in February. Ripening was delayed by the cool conditions

In New South Wales, rainfall was generally below normal in the ripening period, and, with the exception of parts of the northern half of the State, precipitation was mostly extremely light. In many districts practically no rain fell. Temperatures varied remarkably and hot weather had an adverse effect in some vineyard areas, where grapes were badly shrivelled. The vintage generally was expected to be about three weekslate, but the yield in this State was expected to be heavier than last season.

For the Commonwealth as a whole crop prospects were better than last year, but there were wide differences between the various estimates ; some were of 15-16 million gallons (18-19 million American gallons) others 16-18 million (19-22 million American gallons), while a few private estimations gave yields rather similar, on the whole, to those of last season's crop

On December 31 stocks of wine in South Australia were 12,380 thousand gallons (14,870 thousand American gallons) of which 150 (180) for distillation. This total is the largest for five years, but the quantity for distillation is the lowest. In the six months ended on December 31, diminution of stocks was only 3,220 (3,870) thousand gallons.

In the seven months ended on January 31, export overseas was only 1,676,000 (2,013,000) gallons, instead of 2,309,000 (2,773,000) exported in the same months last season. This reduction is the result of a contraction in British consumption of Australian wines and of an accumulation of stocks in bond in the United Kingdom.

It would appear, therefore, that the estimate that only 2,500,000 (3,000,000) gallons will be exported in 1932-33 will not be exceeded, in 1931-32 3,476,000 (4,174,000) gallons were exported.

Consumption of South African wines is, on the contrary, increasing and this competition preoccupies Australian wine makers

In 1932, 7,176 (8,618) thousand gallons of wine were used for distillation purposes, from which 1,155,000 (1,387,000) gallons of proof spirit, 156,200 (187,600) gallons of proof brandy and 999,000 (1,200,000) proof gallons for fortifying wines were produced. These quantities are smaller than those of 1931. Inter-State exports were also smaller in 1932 than in 1931. Stocks in bond on June 30, 1933 will be, therefore, at least 3 or 4 (4 or 5) million gallons greater than those on June 30, 1932.

There is a marked tendency on the part of winemakers to reduce the grape price below the level established by the Commonwealth Government, which is equal to that of last year. Viticulturalists generally try to resist, but, in some districts, have not succeeded

## OLIVES

*Spain* : Weather conditions have so far been favourable to the growth of olives.

*Italy* : Fruit formation continued in good conditions.

*Portugal* : The olive trees, following the poor crop of last season and abundant winter rains, show luxurious vegetation; fruit formation is forecast to be very abundant and if the weather conditions are favourable, a very heavy olive crop may be obtained

*Palestine*: Flowering of olives was exceptionally heavy. The setting of the fruit is not yet concluded, but the outlook is good if enough soil moisture is available.

*Algeria*: At the beginning of May the olives were in full flower. The scirocco at the end of April probably caused losses but it is still too early to estimate its influence on this year's fruiting. On 1 May crop condition was average (100).

*Tunis*: Until the end of April, conditions favoured the olive trees. Flowering took place under good conditions.

On May 1, the condition of olives was good (120).

## COTTON

*Argentina*: The prolonged summer drought in the Chaco caused damage. Thanks to the rains in March the crop promised fairly regular yields however.

*United States*: In the week ended on about April 26 cotton planting was very backward. Cool, wet weather in many areas hindered planting and germination and poor stands were frequently reported, necessitating some replanting. In the following week ended on May 3 sowing was in full swing and the weather was generally fairly favourable though only poor to fair advance was the rule, the season being unusually late in most sections of the belt. Wet soil was still a hindrance in many important areas. In Texas, except in the Northeast, where moisture was not needed, dryness retarded farm work and germination, with a poor advance in planting and growth slow.

Landstorms caused some damage in parts of Oklahoma and in Louisiana there was considerable hail and local storm damage. In the week to May 10 farm work was delayed by heavy rains in most sections of the central States and planting progressed slowly; good advance was made in some parts of the western belt and more favourable conditions prevailed in the Atlantic States. In Texas planting was progressing slowly in the northern portion of the State but germination was very poor necessitating considerable re-planting. In the week ended on May 17 cotton planting was progressing slowly.

According to the final ginning report issued on 17 May by the Bureau of the Census, the total quantity of cotton, not including linters, ginned from the 1932-33 crop, amounts to 12,710,000 running bales, counting round bales as half bales, equivalent to 13,002,000 bales of 500 pounds gross-weight, as against 16,629,000 running bales and 17,096,000 equivalent 500 pounds bales in 1931-32, 13,756,000 running bales and 13,932,000 bales of 500 lb. in 1930-31; 14,548,000 and 14,825,000 in 1929-30; 14,297,000 and 14,478,000 in 1928-29, 12,783,000 and 12,956,000 in 1927-28.

The average gross weight of the running bales for 1932-33, counting round bales as half bales and excluding linters, is 511.5 lb., as against 514.0 in 1931-32, 506.4 in 1930-31, 509.5 in 1929-30, 506.3 in 1928-29 and 506.8 in 1927-28.

The condition of the cotton crop improved during the week ended on May 25. The weather was fairly favourable generally.

*French West Africa*: The 1932-33 crop was compromised in the French Sudan by unfavourable weather; the Allen variety is spreading amongst the natives there. In Haute Volta, the principal producer of the group, the crop has, due to the low prices, which prevent export, been practically limited to native requirements.



Production in French West Africa as a whole, which exceeded 220,000 centals (46,000 bales) of lint on the average of the five years ending 1927-28 and attained 290,000 centals, (60,000 bales) in 1929-30 but fell to about half that figure last year, will very probably not exceed 90,000 centals (20,000 bales) this year.

*Egypt* : During April the temperature was below normal on most days, particularly during the first half of the month, in consequence of which the normal growth was retarded and germination was distinctly affected in an adverse manner, especially in late-sown areas. All sowing is over ; it was effected in the usual time and even somewhat earlier in some districts. The instability of weather and the lack of exceptionally warm and dry spells have increased resowing at the rate of 10 % on the whole and 40 % in some cultivations where it was repeated several times. In Upper Egypt, where resowing was less important, thinning of early-sown areas and manuring of some of them are in progress. The supply of water for irrigation has been adequate.

During the first half of May the weather was cold during the night and almost moderate during the day. It is not deemed quite favourable except during the last days. The growth in Lower Egypt is considered to have improved somewhat in comparison to what it formerly was, as the plants began to regain part of the loss incurred by the unfavourable weather. The growth is however weaker than what it was in the corresponding period last year. Germination and growth have made active progress in Upper Egypt where thinning of early-sown areas is over. Buds have already formed in some early sown areas.

*Uganda* : In the Eastern and Northern Provinces the buying season was practically finished at the end of March, but some of the returns were incomplete. The season was later in the Buganda Province and complete figures were not yet available. The estimate of total production given in the March Report is so far unchanged.

*Union of South Africa* : Production of lint in the Union and Swaziland in 1932-33 is estimated at 9,600 centals (2,008 bales) a decrease of 28 % on that of 1931-32 and of 78 % of the average of the five years ending 1930-31.

## FLAX

*France* : Rainfall in the latter half of April was beneficial to the flax crop, which is growing well.

The maintenance of the Government's premium for flax growing and the improvement of the flax market permit the forecast of a certain extension of this crop, encouraged to a limited extent, moreover, by the flax producers' association.

*Great Britain and Northern Ireland* : In Northern Ireland satisfactory progress was made during April with the sowing of flax, especially after the 18th., when some rain fell. The very low prices of potatoes and oats have encouraged flax-growing and an increase in acreage is expected.

*Hungary* : The flax sowings were growing regularly towards May 12. Warm rains have had a good influence on the crop.

*Czechoslovakia* : The area this year is 17,000 acres, 3.9 % above that of last year and 58 % below the five-year mean.

*Canada* : According to an inquiry made by the Canadian Government on farmers' intentions to plant as on May 1, 384,000 acres should be sown to linseed compared with 454,000 in 1932 and 489,000, the average for 1927-31; percentages: 84.6 and 78.5.

## HEMP

*Hungary* : The hemp sowings were growing regularly towards May 12. Warm rains have been beneficial to this crop.

*Czechoslovakia* : The area cultivated to hemp this year will be about 19,170 acres, against 19,210 in 1932 and 22,850 on the average of the five years ending 1931. Percentages 99.8 and 83.9.

## HOPS

*Hungary* : Toward 12 May crop condition was satisfactory.

*Czechoslovakia* : Hop picking has already been finished in most producing areas and wire supports have already been erected.

In most regions where hops are grown, crop condition on May 1 was above the average.

## TOBACCO

*Hungary* : Tobacco in seed beds shows good growth. Transplanting began towards May 12.

*Algeria* : Transplanting of tobacco was delayed in April by rainfall and lower temperatures followed by frosts on April 22 and 23; they still continued in the first few days of May. Recovery is good in the earlier plantings in the departments of Algiers and Constantine.

Owing to the difficulty of marketing the crop, the Syndical Co-operative Society of Bône for the sale of tobacco ("Taba coop") has advised growers to reduce the area of their crops of smoking tobacco and to limit plantings to the best varieties and to soils permitting the production of good quality products.

*Union of South Africa* : Production of tobacco by Europeans is now estimated at 10 million pounds, a decrease of 53% on that of 1931-32 and of 41 % on the average of the five years ending 1930-31.

## OTHER PRODUCTS

### Cacao.

*Brazil* : Entries of cacao by rail in the Ilheos and Rio de Contas zones in April were smaller than in the same month last year but the total for the season shows a considerable increase, as indicated in the following table.

	April 1933	May 1932 to April 1933	April 1932	May 1931 to April 1932
Ilheos zone (1000 lb.) . . . . .	556	108.240	447	102.151
Rio de Contas zone (1000 lb.) . . . . .	26	15.374	188	9.795

The weather was wet and unsettled throughout April. Severe floods interrupted transport for about ten days. No damage is, however, reported. The rainfall for the month was 559 mm. (22 inches) against an average of 244 mm. (9.61 inches).

Prospects for the coming crop were reported to be good. It is not anticipated that the forecrop will be as heavy as last year.

*Ecuador* : Production in 1932 is estimated at 30.9 million pounds against 28.7 million in 1931. Picking was carried out in good conditions. In places disease damage was reported.

*Trinidad* : March was unusually wet. Drying of the beans was impeded. Trees were showing good growth but were showing signs of lack of attention while a severe recrudescence of witchbroom had become apparent, the pods being now in some cases attacked. Toward the end of March, however, drier conditions set in and picking took place in normal conditions. Production was expected to be average.

On some estates cacao is being partly substituted by mixed crops of coffee, bananas and grapefruit.

*St. Lucia* : Pruning was concluded at the end of March and flowering had begun.

*Gold Coast* : Final reports indicate that the major crop has been larger than that of last year.

In Ashanti the end of the crop has been more bulky than expected. The Western Province, from which unfavourable reports had been received, shows an increase on the figures of the previous year. Reports from the Western Province give a yield slightly higher than that of last year, in the Dunkwa area and one similar to that of last year in the Sekondi-Dixcove District. The yields in the Eastern Province are on the whole better than those of last year, while in the Central Province a crop about the same as that of last year is indicated.

Large stocks of the major crop, larger than those of last year, are being held in the country, 58 million pounds being visible on 31 March in Takoradi sheds and on Accra beach. Reports have been received that in Ashanti stocks of some magnitude are being stored up country at Kumasi, Bekwai, Obuasi and Dunkwa.

It is now possible to give an estimate of the total 1932-33 major crop with a reasonable degree of accuracy. The quantity of 1932-33 major crop cacao shipped from Gold Coast ports from 1 September 1932 to 31 March 1933 was 335 million pounds (371 million less 36 million carryover from stocks on 1 September 1932 and from the previous mid-crop and minor crop). The quantity of 1932-33 cacao (all major crop) which merchants stated they had in stock on 1 April 1933 was 154 million pounds. The crop is practically all in the hands of buyers. The total estimate is therefore 489 million pounds. The estimate given at the end of November was 430 million pounds (excluding Togoland) against the actual figure (excluding the 8 million transported from Togoland across the Senchi ferry) of 481 million pounds. This large under-estimate could not have remained so long concealed had statements of merchants' stocks been previously available.

The minor crop is setting well all over the country save in the Oda District, where heavy wind storms early in March had an adverse effect and in Kibi, where very few flowers are reported as setting.

In Ashanti the mid-crop is small and likely to be neglected in some areas; the minor crop is normally small. In Western Province picking was expected to start in April; yields are likely to be less than last year in the Sekondi-Dixcove area. Yields

in Central Province appear to be similar to those of last year ; the crop in the Saltpond District is a little earlier and smaller than in 1932. In Eastern Province the crop will ripen at the normal time save at Kibi, Suhum and Krabo, where it will be early ; main pickings in the Nsawam District were expected to take place in March and June ; Huhunya reports a crop larger than last year and late. In general the crop will be a light one and, if anything, slightly less than that of last year. Not much movement was expected until May.

### Coffee.

*Kenya* : Coffee production in 1932-33, according to the first estimate, reaches 334,000 centals as against 203,000 in 1931-32 (165.1 %) and 234,000, the average for the five-year period 1926-27 to 1930-31 (142.9 %).

### Tea.

*India* : During March hot dry weather prevailed in the tea-growing districts of the north-east and immediate prospects could only be described as fair, in the south a little rain fell and prospects improved. At the beginning of April more rain was generally required. Manufacture had begun in several districts. The quantity of leaf manufactured in March in North India was negligible, that in South India was 3.38 % greater than up to the same date last year.

*Japan*. Favoured by the weather, the crop condition of wheat was average on May 1. Last year, at the same date, condition was mediocre.

### Groundnuts.

*French West Africa* : The crop in the Sudan, which accounts for about one-sixth of the total, was good despite damage in one district from "leprosy". The crop in Haute-Volta, which is on the whole only about 5 %, was, on the contrary, mediocre due to disease.

On the whole the information available for the principal regions of production permits it to be established that the crop has been good and probably about 700,000 tons ; in the preceding years it has oscillated between 400,000 and 800,000 tons.

*Union of South Africa* : In the northern Transvaal, which produces fully 90 % of the groundnut crop, conditions have been very favourable ; though this area also experienced the dry spell during March the crop was too far advanced to suffer damage. The crop in the Potgietersrust district was particularly promising.

Production is now estimated at 166,000 centals, an increase of 145 % on that of 1931-32 and of 35 % on the average of the five years ending 1930-31.

### Colza.

*Austria* : Winter colza was commencing to flower at the beginning of May ; its condition was 2.4 against 2.1 on 1 April 1933 and 3.1 on 1 May 1932.

*Hungary* : Toward 12 May colza was in full flower ; due to the rather cold weather of April it is low and sparse. Insects have caused damage in two departments.

*Netherlands* : The crop condition of colza on April 22 by the Dutch system was 63 against 73 at the same period of last year.

*Poland* : On 15 April condition of winter colza was 3.2 against 3.3 a month previously and 2.9 a year previously.

*Rumania* : Sowings of winter colza have not in general wintered well. In places the land has been reworked where sowings have been destroyed.

*Czechoslovakia* : The area cultivated to colza this year will be about 3,780 acres against 3,830 in 1932 and 4,260 on the average of the five years ending 1931. Percentages 98.8 and 88.8.

*India* : In the middle of April it was reported that rapeseed had been damaged by tela in part of the Punjab, which is by far the most important producing province.

*Palestine* : Only very small areas have been sown to sesame and it is doubtful if the soil moisture will suffice to bring the crop to maturity.

### **Jute.**

*India* : Sowing was begun in Bengal and Bihar and Orissa in the middle of April and was in full swing in the middle of May.

### **Sericulture.**

*Bulgaria* : The area of mulberry trees in 1933 is 12,990 acres against 14,800 in 1932, that is, 86.7 %. On May 1 the crop condition of mulberries was 120. The quantity of silkworm eggs incubated is estimated at 27,000 ounces compared with 27,500 in 1932 and 39,600 on the average for the preceding five years ; percentages: 98.1 and 68.2.

*Italy* : The course of the season is on the whole good and favourable for a good growth of the mulberry leaves, which promise to yield well. At the end of April some damage was caused by the cold.

In the earlier producing areas the silkworms are in the first stage of growth whereas in the others the incubation period is nearing an end.

In the areas of early production, silkworms, at the beginning of May, were at the first stage of growth whereas in the others they were about at the end of the incubation period. At mid-May, the worms were in the first and second phases and made good normal progress ; in the early producing areas, such as Venetia, the third phase has begun.

*Japan* : The quantity of eggs placed in incubation for spring cocoon production was 2,740,000 ounces, that is, a little below that of 1932 (2,750,000 ounces) but 2.5 % above the average of 1927-31, which was 2,673,000 ounces.

According to a telegram received on 9 May flowering of the mulberries took place in bad conditions.

# SUPPLEMENTARY FIGURES

As the production and area for most countries were published in the February number of the Monthly Crop Report and Agricultural Statistics, it is not necessary to repeat them again this month. Hence only the new data and any modifications of the figures published last month are given in continuation. In another table is shown the total world production based on the figures received up to the time of going to press.

COUNTRIES	AREA					PRODUCTION							
	1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	% 1932 and 1932/33		1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	% 1932 and 1932/33	
				1931 and 1931/ 1932 = 100	Aver. = 100							1931 and 1931/ 1932 = 100	Aver. = 100
WHEAT	1,000 acres				1,000 centals			1,000 bushels					
Kenya 1) . . . .	41	43	67	94.3	60.5	160	174	404	267	290	674	92.1	39.6
Tunis . . . . .	2,392	1,977	1,774	121.0	134.8	10,472	8,378	6,905	17,453	13,962	11,508	125.0	151.7
Un of S. Africa .	1,556	1,736	966	89.6	161.1	6,376	8,228	4,905	10,627	13,713	8,175	77.5	130.0
BARLEY													
Tunis . . . . .	1,507	1,223	1,235	123.2	122.1	7,496	3,968	4 063	15,616	8,268	8,465	188.9	184.5
OATS													
Tunis . . . . .	54	67	109	81.5	49.8	617	728	780	1,929	2,274	2,429	84.8	79.1
RICE													
Yugoslavia. . . .	5	4	4	142.2	143.0	70	44	45	155	98	99	157.1	155.7
POTATOES													
Yugoslavia. . . .	587	584	565	100.4	103.7	30,235	24,489	26,193	50,391	40,815	43,654	123.5	115.4
SUGAR-BEET									1,000 short tons				
Yugoslavia. . . .	105	110	119	95.8	88.0	16,170	15,596	17,471	808	780	874	103.7	92.6
VINES (WINE)						1,000 Imperial gallons			1,000 American gallons				
Rumania . . . . 2)	675	593	583	113.9	115.8	131,895	192,445	143,969	158,502	231,109	172,894	68.6	91.7
Yugoslavia. . . .	517	492	442	105.2	117.1	96,506	98,850	74,841	115,895	118,710	89,877	97.6	128.9
Tunis 2) . . . . .	99	87	72	113.5	137.3	37,616	15,545	19,255	45,173	18,668	23,123	242.0	195.4

COUNTRIES	AREA					PRODUCTION									
	1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33		1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 an <sup>1</sup> and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926-27 to 1930/31	1932 and 1932/33			
				1931 and 1931/ 1932	Aver. = 100							1931 and 1931/ 1932	Aver. = 100		
1,000 acres			= 100	= 100	1932/33	1931/32									
OLIVES (OIL)						1,000 Imperial gallons			1,000 American gallons						
Yugoslavia . . . .	—	—	—	—	—	83	88	108	1,087	1,150	1,424	94.5	76.		
Tunis . . . . .	—	—	—	—	—	1,323	1,102	820	17,382	14,485	10,777	120.0	161.3		
COTTON (GINNPD)						Centals			1,000 bales (478 lb. net)						
Yugoslavia . . . .	2	2	2	122.0	112.7	3	2	2	1	3	3	158.7	135.6		
United States . .	35,939	40,693	44,690	88.3	80.4	62,150	81,719	70,907	13,002	17,096	14,834	76.1	87.6		
China . . . . .	5,633	4,803	4,806	117.3	117.2	10,803	8,529	10,183	2,260	1,784	2,139	126.7	106.1		
A. E. Sudan . .	325	336	299	96.7	108.6	579	1,007	593	121	211	124	57.5	97.7		
FLAX (FIBRE)						1,000 pounds									
Yugoslavia . . . .	26	31	32	86.1	83.5	234	216	183	23,446	21,627	18,285	108.4	128.2		
LINSEED.						1,000 bushels									
Yugoslavia . . . .	—	—	—	—	—	19	16	26	33	28	46	118.4	72.0		
HFMP (FIBRE).						1,000 pounds									
Yugoslavia . . . .	62	65	78	95.3	79.2	469	484	594	46,915	48,373	59,400	97.0	79.0		
HEMPSEED.						1,000 pounds									
Yugoslavia . . . .	—	—	—	—	—	20	22	29	2,030	2,220	2,852	91.4	71.2		
TOBACCO.						1,000 pounds									
Yugoslavia . . . .	53	48	33	110.8	158.4	373	294	243	37,300	29,379	24,257	127.0	153.8		
HOPS						1,000 pounds									
Yugoslavia . . . .	4	6	15	64.3	24.5	18	35	75	1,819	3,499	7,516	52.0	24.2		

1) European crops only. — 2) Area bearing. — 3) Area under 500 bales.

## TOTALS OF WORLD AGRICULTURAL PRODUCTION

The following totals have been obtained from the data in the tables published for each product in January, which have been revised and completed. With the name of each product is indicated the number of countries for which data for 1932 are at present available and also the percentage of their total production in 1931 to world production in the same year as published in the 1931-32 Yearbook, when they comprised nearly all producing countries, except U. S. S. R.

Crop, number of countries comprised in the total, and percentages of world production	AREA					PRODUCTION							
	1932 and 1932-33	1931 and 1931-32	Average 1926 to 1930 and 1926-27 to 1930-31	Percentages for 1932 and 1932-33		British weights			American weights			Percentages for 1932 and 1932-33	
				1931 and 1931-1932 = 100	Average 1931-1932 = 100	1932 and 1932-33	1931 and 1931-32	Average 1926 to 1930 and 1926-27 to 1930-31	1932 and 1932-33	1931 and 1931-32	Average 1926 to 1930 and 1926-27 to 1930-31	1931 and 1931-1932 = 100	Average 1931-1932 = 100
	thousand acres					thousand centals			thousand bushels				
Wheat (49 countr. 98 %) . . . .	251,438	247,252	243,407	101.7	103.3	2,230,034	2,247,922	2,201,824	3,716,649	3,746,462	3,669,633	99.2	101.3
Rye (30 countries 99 %) . . . .	46,931	47,035	47,964	99.8	97.8	561,934	468,431	525,399	1,003,456	836,486	938,214	120.0	107.0
Barley (43 countr. 90 %) . . . . .	64,105	62,731	61,622	102.2	104.0	714,430	619,516	678,455	1,488,422	1,290,682	1,413,473	115.3	105.3
Oats (38 countries 98 %) . . . .	101,858	100,855	102,558	101.0	99.3	1,162,731	1,042,179	1,135,865	3,633,508	3,256,787	3,549,553	111.6	102.4
Maize (26 countries 86 %) . . . .	165,426	163,033	154,332	101.5	107.2	2,328,967	2,094,369	2,067,352	4,158,873	3,739,951	3,691,705	111.2	112.7
Rice (rough) (16 countr. 87 %) . . . .	116,188	117,723	114,602	98.7	101.4	1,661,810	1,697,583	1,650,309	3,692,838	3,772,331	3,667,280	97.9	100.7
Potatoes (35 countr. 96 %) . . . . .	31,501	31,178	30,034	101.0	104.9	3,440,570	3,279,998	3,035,548	5,734,169	5,466,554	5,059,146	104.9	113.3
Sugar-beet (21 c. 99 %) . . . . .	4,228	4,735	5,224	89.3	80.9	997,588	1,039,514	1,148,279	49,379	51,975	57,413	96.0	86.9
Cotton ginned (18 countr. 94 %) . . . . .	67,710	73,629	79,080	92.0	85.6	99,089	116,420	114,268	20,730	24,356	23,905	85.1	86.7
Linsced (18 countr. 94 %) . . . . .	11,807	14,762	13,818	80.0	85.4	47,810	68,540	66,547	85,375	122,393	118,834	69.8	71.8
Flax (fibre) (16 countr. 97 %) . . . . .	610	813	1,070	75.1	57.0	2,108	2,842	4,846	210,763	284,177	484,578	74.2	43.5
Hemp (fibre) (9 countr. 63 %) . . . . .	331	331	420	100.0	78.8	2,269	2,317	3,470	226,856	231,707	347,009	97.9	65.4
Tobacco (14 countries 50 %) . . . .	2,155	2,946	2,723	73.2	79.1	16,601	23,962	21,775	1,660,086	2,396,212	2,177,513	69.3	76.2
Hops (8 c. 99 %) . . . . .	96	114	156	84.8	61.9	800	957	1,442	80,028	95,681	144,183	83.6	55.5
Olive oil (9 countr. 96 %) . . . . .	—	—	—	—	—	17,483 thousand 1)	18,519 Imperial 1)	16,852 gallons 1)	229,733	243,349	221,447	94.4	103.7
Vines (19 c. 96 %) . . . . .	—	—	—	—	—	3,537,756 thousand 3)	3,552,890 pounds 3)	3,254,977 1)	4,248,527	4,266,702	3,908,935	99.6	108.7
Silk (8 c. 92 %) . . . . .	2) 6,818	2) 7,020	2) 7,549	97.1	90.3	851,236 3)	919,474 3)	947,989 3)	851,236 3)	919,474 3)	947,989 3)	92.6	89.9

1) Wine. — 2) Eggs in incubation. — 3) Cocoons.



## FODDER CROPS

*Germany* : Due to the drought meadows and pastures have made little progress so that green feeding of stock will begin relatively late. Clover fields show gaps here and there. Sowings of mangolds were not finished by the end of April.

The proportion of the crops abandoned in consequence of winter damage was 0.5% of the area sown (against 0.7 % last year) in the case of clover and 0.9 % (0.7 %) in that of alfalfa.

At the beginning of May condition of the principal fodder crops was as follows : clover 2.8 (as on the same date in 1932), alfalfa 2.7 (2.8), irrigated meadows 2.9 (2.9), permanent meadows 3.0 (3.0).

*Austria* : At the beginning of May, the growth of all fodder crops (temporary and permanent meadows) was greatly in delay owing to the cold weather and lack of moisture. Owing to fodder shortage, a beginning was made with the cutting of mixed fodder sown in autumn and also of rye. Yields are, however, very low. Livestock are also being pastured but do not find there sufficient feed. The alpine pastures are still almost everywhere covered with snow.

At the beginning of May the condition of the principal fodder crops was as follows : Red clover : 2.5 (against 2.4 on 1 April of this year and 2.8 on 1 May 1932) ; alfalfa : 2.3 (2.5, 2.8) ; mixed clover : 2.5 (2.5, 2.7) ; permanent meadows : 2.4 (2.5, 2.7) and pastures : 2.4 (2.4, 2.8).

*Belgium* : Owing to the dry, cold weather during April, the grass is growing fairly slowly.

The data of production of fodder crops in 1932 compared with the figures for 1931 and the average for the preceding five years are as follows :

CROP		1932	1931	Average 1926-30	% 1932	
					1931 = 100	Average = 100
Mangels	(centals)	136,314	117,455	108,684	116.1	125.4
	(sh. tons)	6,816	5,873	5,434		
Carrots, main crop	(centals)	560	968	627	57.9	89.3
	(sh. tons)	28	48	31		
Turnips and swedes, main crop	(centals)	4,302	4,424	4,704	97.2	91.5
	(sh. tons)	215	221	235		
Crimson clover	(centals)	4,681	5,520	4,731	84.8	98.9
	(sh. tons)	234	276	236		
Red clover	(centals)	9,196	9,640	8,676	95.4	106.0
	(sh. tons)	459	482	434		
Other clover	(centals)	1,676	1,960	1,953	85.5	85.8
	(sh. tons)	83	98	98		
Alfalfa	(centals)	1,325	1,455	1,378	91.0	96.1
	(sh. tons)	66	73	69		
Sainfoin	(centals)	399	427	533	93.4	74.9
	(sh. tons)	20	21	27		
Meadow-hay, mown	(centals)	24,633	25,276	22,818	97.5	108.0
	(sh. tons)	1,232	1,264	1,141		
Rye-grass and timothy	(centals)	918	877	835	104.6	110.0
	(sh. tons)	46	44	42		
Turnips (catch crop)	(centals)	65,969	65,056	61,894	101.4	106.6
	(sh. tons)	3,298	3,253	3,095		
Carrots (catch crop)	(centals)	1,738	1,797	1,870	96.7	93.0
	(sh. tons)	87	90	93		
Spurry (catch crop)	(centals)	3,791	3,809	3,890	99.5	97.5
	(sh. tons)	190	190	194		

*Irish Free State* : The first three weeks of April were dry and summerlike ; the last week was showery but mild. Under such conditions pastures improved considerably. Ample stocks of fodder remain on hand to meet all requirements.

*France* : The meadows have greatly suffered from cold and drought, which persisted until the latter half of April. Rainfall nearly everywhere between 15 April and 10 May improved their general condition, which, however, was still mediocre at mid-May ; of the temporary meadows, the clover fields particularly suffered. In the southern regions and especially in the Southwest, the first cutting will give only poor results. It is to be feared that the fodder grain crop will be compromised in Provence.

The sowings of leguminous crops and fodder roots have been somewhat delayed by drought but have in general been effected under good conditions ; sprouting of the first sowings had been hindered by dry weather until the rain improved the situation.

*Great Britain and Northern Ireland* : In England and Wales the month of April was on the whole favourable for agricultural operations. The preparation of the land for roots has been carried out under excellent conditions, facilitating cleaning; good seed beds have been obtained generally with some delay by rain on heavy lands. Sowings of mangolds were progressing favourably at the end of the month. The hay seed crop and pastures were a little backward and needed rain though precipitation at the end of April brought about an improvement.

In Scotland pastures made good progress during April and by the end of the month grass was mostly plentiful. Apart from a shortage of turnips, supplies of fodder generally are plentiful and ample supplies of concentrated feeding stuffs are available.

In Northern Ireland April weather was on the whole satisfactory for seasonal work ; satisfactory progress was made in preparing for the mangel and turnip crops. With the exception of hay in a few areas and turnips there was no scarcity in the supplies of home-grown feeding stuffs. Grass improved after rain in the latter part of the month.

*Hungary* : Mangolds sprouted well but until May 12 they grew very slowly. In several departments damage by insects and frosts is reported. The temporary meadows are backward in growth. Pastures are also weak and do not furnish sufficient feed for livestock.

*Italy* : Fodder crops were particularly favoured by precipitation in the latter half of April but their growth was backward due to the low temperature. The first cuttings have yielded well.

*Latvia* : The general condition of the clover crop, by the Institute's system, was 115. According to the reports of correspondents, it was average in 33.2 % of the cases, above the average in 60.6 % and below the average in 6.2 %.

*Lithuania* : The cold weather was unfavourable to fodder crops.

*Netherlands* : The crop conditions of clover and of permanent meadows and pastures on 22 April, by the Dutch system, were 65 and 67 respectively against 61 and 57 at the same period of last year.

*Poland* : On 15 April condition of clover was 3.1 against 3.2 a month previously and 3.0 a year previously.

*Rumania* : Towards May 10, permanent meadows and pastures looked well. Grass was plentiful.

*Switzerland* : Vegetation of permanent and temporary meadows was in part hindered by night frosts and the strong north wind. The rise in temperatures and the precipitation toward the end of April, however, stimulated growth and green fodder is plentiful, while prospects for the hay crop are considerably improved. Only in some cases has vegetation been rather compromised by severe frosts.

For the country as a whole crop condition was as follows :

	1 May 1933	1 April 1933	1 May			
			1932	1931	1930	1929
Permanent meadows . . . . .	3.8	3.9	3.8	3.5	4.4	3.7
Temporary meadows . . . . .	3.9	3.8	3.8	3.6	4.5	3.7

*Czechoslovakia* : On May 1 the crop condition of temporary meadows (clover, alfalfa) was generally above the average. That of permanent meadows was generally below it.

The growth of fodder crops was delayed by dry, cold weather in the latter half of April and complaints were also made of damage by night frosts

*Canada* : According to a telegram of May 12 received from the Canadian Government, the crop condition of hay and clover on May 1 was 94 compared with 90 on May 1, 1932.

*Palestine* : The sixth cutting of clover (*bersim*) has been concluded on irrigated areas. Yields were good. The oat and vetch (hay mixture) crop was too far advanced to benefit by the late rains. In isolated cases excellent results were obtained but in general the yield was 50 to 60 % below normal.

*Algeria* : Following the rainfall and generally favourable conditions, the crop condition of pastures and meadows is very good ; the grass is abundant and of good quality

The warm, dry weather which set in in the last week of April and persisted at the beginning of March favoured the cutting and drying of fodder crops.

Mangolds have sprouted satisfactorily and are growing under good conditions ; it seems that this crop covers a larger area than last year, when it was greatly reduced.

*Egypt* : The fourth cutting of *bersim* has been started in early-sown areas in Lower and Middle Egypt. Harvesting of the crop left in basin lands for seed purpose is in progress. The crop is in a satisfactory condition.

*French Morocco* : Fairly regular rainfall in April favoured the growth of meadow and pasture grass, the condition of which is satisfactory.

## LIVESTOCK AND DERIVATIVES

### Livestock in Belgium.

In the following table are given the numbers of livestock in Belgium on December 31, 1932 compared with a series of preceding years and the pre-war period :

*The numbers of livestock in Belgium in 1932 and previous years.*

YEAR	Horses 1)			Cattle				Pigs			
	under 3 years of age	over 3 years of age	Total	under 2 years of age	dairy cows	other cattle over 2 years of age	Total	under 6 months of age	over 6 months of age	of which store pigs (fatten- ing)	Total
1932 . . .	95,079	142,933	238,012	745,752	941,814	95,880	1,784,446	679,424	565,230	421,322	1,244,654
1931 . . .	96,663	145,326	241,989	738,740	930,930	97,866	1,767,536	672,902	562,312	420,114	1,235,214
1930 . . .	98,184	147,787	245,971	732,437	925,556	100,661	1,758,654	680,867	568,754	424,066	1,249,621
1929 . . .	99,564	149,450	249,014	727,208	911,720	99,420	1,738,348	675,374	561,628	421,252	1,237,002
1928 . . .	103,392	149,922	253,314	743,651	907,730	99,160	1,750,541	621,362	517,769	385,020	1,139,131
1927 . . .	101,978	154,487	256,465	735,462	901,902	101,450	1,738,814	609,824	514,419	381,347	1,124,243
1926 . . .	100,356	149,931	250,287	719,083	891,786	100,833	1,711,702	626,730	517,130	386,564	1,143,860
1925 . . .	100,721	149,303	250,024	696,277	856,352	102,138	1,654,767	625,541	526,178	393,674	1,151,719
1924 . . .	101,055	151,259	252,314	683,186	839,076	105,393	1,627,655	625,961	513,112	385,325	1,139,073
1923 . . .	96,349	146,835	243,184	675,204	820,692	106,832	1,602,728	652,467	523,963	394,867	1,176,430
1913 . . .	95,472	171,688	267,160	779,950	936,800	132,734	1,849,484	746,674	665,619	—	1,412,293

1) Horses employed in agriculture.

Compared with the preceding year, there was in 1932 an increase in the number of cattle and pigs and a slight but constant decrease in the number of horses.

Since 1929, the total number of cattle has increased regularly and in 1932 the figure represented 96.5 % of that of 1913.

Dairy cows, which account for over half of the total number of cattle, have during the last ten years increased gradually and without interruption.

In fact, the number of dairy cows in 1932 exceeded that of 1923 by 14.8 % and even that of 1913 (+ 5,000 head).

There is also evident an increase in the number of pigs during the ten year period considered and although the trend of pig-numbers is irregular, it shows a fairly considerable rise in 1929 compared with 1928.

### Number of pigs in Scotland.

On February 4th the Department of Agriculture of Scotland obtained special returns of the numbers of pigs kept in Scotland on holdings exceeding one acre in extent ; returns are made annually on June 4th and this additional

return was obtained in consequence of the recent submission to the Minister of Agriculture and the Secretary of State for Scotland of a scheme for marketing pigs. The results are given below.

	February 4 1933	June 4 1932
Sows . . . . .	20,546	19,772
Boars . . . . .	2,458	2,183
Other pigs :		
over 2 months . . . . .	90,099	143,370
under 2 months . . . . .	41,287	
Total . . . . .	154,390	165,325

Sows and boars show increases of 4 % and 12.7 % respectively, while " other pigs " have decreased by 8.4 %, the resulting total decrease being 6.6 %. The increase in the breeding classes is of greater importance than the decrease among " other pigs ", which is largely due to seasonal causes.

### Livestock in Canada.

The numbers of livestock and poultry on farms in Canada as on June 1, 1932 were as follows compared with the corresponding figures for the previous five years :

SPECIES	1932	1931	1930	1929	1928	1927
	(ooo head)					
Horses . . . . .	3,089	3,129	3,295	3,376	3,376	3,422
Cattle, total . . . . .	8,511	7,991	8,937	8,825	8,772	9,150
of which:						
Milch cows . . . . .	3,625	3,365	3,683	3,685	3,782	3,883
Sheep . . . . .	3,644	3,608	3,696	3,636	3,416	3,263
Pigs . . . . .	4,639	4,717	4,000	4,382	4,497	4,695
Poultry, total . . . . .	64,080	65,468	60,795	59,933	53,780	50,178
of which:						
Hens and chickens . . . . .	59,843	61,572	56,247	55,243	49,593	46,172
Turkeys . . . . .	2,478	2,232	2,399	2,423	2,066	1,890
Geese . . . . .	948	904	1,160	1,155	1,125	1,135
Ducks . . . . .	811	760	989	1,112	996	98

The decrease in the number of horses continued in 1932 ; the decrease compared with 1927 was roughly 10 %. The number of cattle showed a sharp recovery on 1931 but was still less than in previous years. The total number of poultry decreased slightly, after a constant increase for some years, due to a setback in the number of hens and chickens but the total still remained at a relatively high level. The number of sheep increased slightly compared with 1931 and was about 9 % above that of 1927. For pigs, a slight decrease was noted and the number remained at approximately the same level as in 1927.

### World trade in eggs in the shell.

On the basis of the data available for exports and imports of eggs in the shell from the principal exporting and importing countries it is possible to outline the characteristics of the trade movement of this product in 1932 and in the first quarter of 1933. The 17 exporting countries and the 7 importing countries for which data are published in the following table, are sufficiently representative of the world egg trade. In fact the quantity of eggs in the shell exported from the 17 countries considered represents, both in 1931 and 1930, over 91 % of world exports, whereas the quantity absorbed by the 7 importing countries considered amounts to about 90 % of world imports.

TABLE I. — *World Egg Trade - Exports.*

(1,000 lb.).

Country	1932	1931	1930	% 1932	
				$\frac{1931}{100}$	$\frac{1930}{100}$
Belgium . . . . .	82,413	78,093	69,454	105.5	118.7
Bulgaria . . . . .	41,467	49,314	42,359	84.1	97.9
Denmark 1) . . . . .	152,217	134,251	118,806	113.4	128.1
Irish Free State 1) . . . . .	59,976	71,155	72,817	84.3	82.4
France . . . . .	2,306	15,104	45,217	15.3	5.1
Hungary . . . . .	14,106	26,414	29,051	53.4	48.6
Italy . . . . .	8,539	19,807	20,551	43.1	41.5
Netherlands . . . . .	176,503	140,037	187,292	92.9	94.2
Poland . . . . .	82,458	106,033	121,500	77.8	67.9
Rumania . . . . .	34,833	28,512	37,088	122.2	93.9
U. S. S. R. . . . .	15,805	45,058	21,707	35.1	72.8
Yugoslavia . . . . .	36,356	57,997	67,085	62.7	54.2
United States 1) . . . . .	3,835	12,705	30,720	30.2	12.5
China 1) . . . . .	49,037	84,234	84,922	58.2	57.7
Turkey . . . . .	54,572	53,940	39,397	101.2	138.5
Egypt 1) . . . . .	28,084	17,259	13,540	162.7	207.4
French Morocco . . . . .	19,712	18,785	21,794	104.9	90.4
<b>Total . . .</b>	<b>862,219</b>	<b>1,008,608</b>	<b>1,023,300</b>	<b>85.5</b>	<b>84.3</b>

1) The original figures, expressed in number of eggs, have been converted to pounds on the basis of the coefficient: 7,260 eggs = 1,000 lbs.

The most salient fact to be noticed on examination of the table of exports is the large reduction of exports in 1932 compared with 1931 and particularly compared with 1930. In fact, in 1932 exports from the 17 countries considered were about 146.5 million pounds smaller than in 1931 and about 161.1 million smaller than in 1930, representing a reduction of 14.5 % compared with 1931 and 15.7 % compared with 1930.

Of the 17 exporting countries considered only 4 have increased their exports compared with the preceding two years, namely: Belgium, Denmark, Turkey and Egypt. Exports in 1932 from Rumania and French Morocco exceed only those of 1931, remaining below those of 1930. In absolute figures, Denmark has obtained the largest increase in exports (18.0 million pounds more than in 1931 and 33.4 million more than in 1930), but in Egypt the relative growth of exports has exceeded that of any other country. This country has, in fact, in 1932 more than doubled its exports compared with 1930. Italy and Spain in particular have absorbed more than usual of the Egyptian product.

Exports in 1932 of eggs in the shell from the Netherlands, the world's largest exporter of these eggs, although remaining at a high level, were still 7.1 % below those of 1931 and 5.8 % below those of 1930.

The increase in exports from the 6 countries mentioned above has not compensated for the large decreases (and for some countries very large decreases) in the remaining group of 11 countries. The maximum percentage reduction has taken place in France, exports from which in 1932 amounted to only about 1/20 of those of 1930. Exports from the United States also show very large reductions, especially compared with 1930.

In general it may be said that the countries of northwestern Europe (the Netherlands, Denmark, Belgium and the Irish Free State) have best resisted a contraction of exports thanks to the superior quality of their product, to their more favourable geographical position relative to the largest importing centres (Great Britain and Northern Ireland and Germany) and also to the better organization of their egg trade.

The group of countries of eastern and southeastern Europe (Poland, the U. S. S. R., Rumania, Yugoslavia, Bulgaria and Hungary) has reduced its exports, which amounted to 318.8 million pounds in 1930, 313.3 million in 1931 and 225.0 million in 1932.

Of these countries, Rumania, Bulgaria and Poland have resisted a contraction of exports better than the others. In the three years under consideration, China (which is a large exporter of eggs in the shell and the largest exporter of egg-products in the world) has diminished its exports in 1932 by over .35 million pounds with respect to 1931 and 1930.

The exports of Italy, which gradually diminished in the three years under review, are shown in the third table.

Against the contraction of exports is to be placed that of imports due to the restrictions imposed by importing countries to protect their own poultry industries and to meet financial difficulties.

Examination of the data of the principal importing countries indicates which countries have chiefly contributed to the contraction in the egg trade. Italy notably increased its imports in 1932 with respect to 1931 and 1930, having imported 22.8 million pounds more than in 1931 and 26.8 million more than in 1930. Switzerland and Spain have increased their imports to a less degree while the imports of Germany, which takes the second rank as an importer, were maintained at the 1931 level, 10.6 % below those of 1930. The reduction of imports into the leading importing country, the United Kingdom, was on the other

hand so large that for the seven importing countries together the decrease amounts to 123.8 million pounds with respect to 1931 and 136.4 million with respect to 1930, that is, 12.5 % and 13.6 % respectively.

TABLE II. — *World Egg Trade — Imports*  
(1,000 lb.).

Country	1932	1931	1930	% 1932	
				1931 — 100	1930 — 100
Germany . . . . .	315,936	315,553	353,221	100.1	89.4
Austria . . . . .	25,195	38,428	38,804	65.6	64.9
Spain . . . . .	51,328	50,050	58,731	102.5	87.4
France . . . . .	28,384	67,643	31,582	42.0	89.9
United Kingdom 1) . . . . .	330,305	428,666	438,853	77.1	75.3
Italy . . . . .	77,138	54,320	50,315	142.0	153.3
Switzerland . . . . .	37,128	34,506	30,332	107.6	122.4
Total . . . . .	805,414	989,172	1,001,838	87.5	86.4

1) The original figures, expressed in number of eggs, have been converted to pounds on the basis of the coefficient: 7,260 eggs = 1,000 lbs.

The persistence of the economic crisis with the consequent diminution or at least stagnation of purchasing-power, the tariff protection and intensification of the poultry industry in the United Kingdom have contributed to this severe contraction in British imports. This situation in the United Kingdom and the recent tariff measures in Germany aiming at assuring the profitability, already seriously menaced, of the industry in that country will in 1933 place a severe burden on the countries having a notable export surplus.

In the following table the characteristic features of the Italian and French egg trades in the seven years 1926-32 are placed in relief. The development of imports and exports of these two countries demonstrates clearly that they have passed from the position of countries prevalently exporters to countries prevalently importers of eggs.

TABLE III. — *Trade in Eggs 1926-32: Italy and France.*  
(million pounds).

Years	ITALY		FRANCE	
	Import	Export	Import	Export 1)
1932 . . . . .	77	9	28	2
1931 . . . . .	54	20	68	15
Average 1926-30 . . . . .	35	29	24	51
1930 . . . . .	50	21	32	45
1929 . . . . .	30	23	32	57
1928 . . . . .	39	26	22	90
1927 . . . . .	34	51	18	30
1926 . . . . .	15	47	14	33

1) Including unsugared yolk for food purposes.



The following table in eggs gives a preliminary indication of the development of the trade in eggs in the shell in 1933:

TABLE IV. — *Import of Eggs in first quarters of the years 1931 to 1933*  
(1,000 lb.)

Country	JANUARY-MARCH			% 1933	
	1933	1932	1931	1932 = 100	1931 = 100
Germany . . . . .	70,714	66,254	66,150	106.7	106.9
Austria . . . . .	5,523	4,938	5,823	111.9	94.9
Spain . . . . .	7,293	9,239	10,027	78.9	72.7
France . . . . .	11,713	5,331	14,695	219.7	79.7
United Kingdom . . . . .	60,148	71,609	96,143	84.0	62.6
Italy . . . . .	3,197	16,887	8,770	18.9	36.5
Switzerland . . . . .	7,168	12,405	7,332	57.8	97.8
Total . . .	165,756	186,663	208,940	88.8	79.3

Even for the short period under review a heavy decrease in British imports is indicated. German imports show an increase with respect to 1932 and 1931, probably due to the importers having taken a larger quantity than usual in expectation of the large increase in the tariff in the middle of March.

V. DESMIREAN.

### Current information on livestock and derivatives.

*Belgium* : Livestock remain in satisfactory health. Towards 20 April, it was possible to turn out livestock on the pastures.

*Irish Free State* : April conditions were favourable to livestock; milk yields were above the average for this time of the year.

*France* : Despite the very slow growth of the grass this spring, which made it necessary to feed animals longer in the stable, the livestock situation is on the whole fairly good. Dairy production, including that of butter, is, however, below the normal for this period of the year.

The abundance of potatoes and milling by-products together with various other favourable circumstances, permits the forecast of a fairly considerable growth of pig production.

*Great Britain and Northern Ireland* : In Northern Ireland cattle and sheep were in good health and condition. The lambing season has been favourable and the crop is probably larger than in recent years.

Milk yields were normal in England and Wales and Scotland ; in Northern Ireland yield was somewhat depressed in places in early April but at the end of the month was normal.

*Netherlands* : Stock have been placed on pasture early this year so that there is no further danger that hay and other fodder will become scarce. Mild and moist weather is, however, desirable. Due to the increased number of milch cows production of milk this year is above normal. The increase is estimated at 5-7 ½% in Groningen, 3-4 % in Friesland, 5 % in Limburg and about 10 % in the sandy areas of North Brabant.

*Switzerland* : According to enquiries made by the Swiss Peasants' Secretariat there was an increase of 10.9 % in deliveries in January, of 10 5 % in February and of 15.4 % in March. On the average for the quarter the increase was 12.3 %.

*United States* : The weather and feed conditions during March this year were not particularly favourable for the development of the early lamb crop but they were much better than in March last year except in California and parts of Oregon and Washington. Except in these latter areas, the early lambs as a whole made at least average growth during March and about April 1 their condition was in general, average or better. In California the condition of early lambs on April 1 was the lowest ever reported for that date and marketing was slow. The general tendency for earlier lambing in most of the early lambing areas should result in earlier marketing.

According to another report published by the Department of Agriculture, there were about 10 % more cattle on feed for market in the eleven Corn Belt States than on the same date in 1932. The increase was general over the entire area, with decreases shown in only two States, Wisconsin and Kansas ; the number on feed in the eastern area was considerably above the five-year average, whereas in the western area it was below it, though larger than last year's number. Inspected shipments of stocker and feeder cattle into the Corn Belt States during the nine months period July 1932 to March 1933, were about 4 % smaller than for the same period a year earlier. Direct shipments not going through stockyards were, however, considerably larger. Reports indicate a smaller proportion of marketings before August 1 with an increase from August to October.

*Algeria* : Livestock are in good health and excellent condition owing to the particularly favourable conditions in the winter and spring and to the good early stand of pasturage ; rainfall has been heavy and the springs are supplying more water than usual, so that reserves for the summer seem to be assured.

Lambing results have been exceptional ; yields often attain 100 and, in some cases, 120 and 125 % ; the condition of lambs is very satisfactory.

*Union of South Africa* : In the inland areas the benefits of the scattered rainfall at the commencement of March were largely dissipated by the severe heat and drought during the latter half of the month. Practically throughout these areas winter prospects were causing considerable anxiety. Dams and springs were failing, most fodder crops had been a failure and veld was short and even bare. Large numbers of sheep were being evacuated from the drought-stricken north-western districts of the Cape Province but in many cases stock were in too poor condition to trek or to be railed for any distance.

On the Transvaal highveld grazing was sufficient for sheep but inadequate for winter feed, although winter pasturage in the lowveld was reported to be fairly plentiful. In the northern Transvaal conditions were relatively favourable apart from the restrictions placed upon the movements of stock and produce as a result of the outbreak of foot-and-mouth disease.

*New Zealand*: For the first six months of the 1932-33 season (August-January) butter production reached a level 15.8 % above that attained in the same period of the previous season. Cheese shows an increase of 13.1 %.

## TRADE

COUNTRIES	MARCH				EIGHT MONTHS (August 1-March 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
Wheat. — Thousand centals (1 cental = 100 lb.).										
Exporting Countries:										
Bulgaria	18	589	0	0	1,193	4,658	0	0	5,688	0
Hungary	326	108	2	0	2,189	6,700	2	0	7,912	0
Lithuania	2	7	0	0	2	18	0	0	20	0
Poland	49	265	0	7	249	690	478	331	1,598	346
Rumania	0	326	2	0	24	19,884	9	4	21,200	9
U. S. S. R.	...	62	...	...	10,838	39,683	2)	1,373	2)	39,820
Yugoslavia	2	414	0	0	500	7,255	0	0	8,796	0
Canada	8,889	5,953	0	7	108,505	74,563	29	55	109,685	75
United States	273	3,450	474	434	11,349	36,643	3,572	5,357	52,805	7,361
Argentina	10,296	15,300	—	—	42,104	54,933	—	—	81,618	—
Chile	...	...	...	...	1)	4	1)	606	1)	0
Turkey	20	159	0	0	99	646	0	0	913	0
Algeria	302	403	53	84	4,116	2,685	838	1,071	4,837	1,462
Tunis	79	214	7	26	2,535	1,834	333	320	5,337	401
Australia	11,217	10,027	0	0	53,844	47,642	0	0	73,793	0
Importing Countries:										
Germany	293	99	1,327	933	12,218	7,172	12,300	11,319	7,313	21,006
Austria	0	0	582	498	0	0	4,054	4,572	0	6,415
Belgium	267	291	2,568	1,903	1,314	2,787	16,960	19,892	3,587	31,478
Denmark	0	0	454	503	15	9	4,586	6,691	9	8,719
Spain	0	0	0	0	0	0	0	35	0	6,482
Estonia	0	0	0	18	0	0	0	181	0	256
Irish Free State	0	0	1,087	677	4	7	5,397	4,359	13	6,369
Finland	0	0	77	18	0	0	611	265	0	428
France	0	0	2,039	4,037	46	9	17,692	28,632	9	53,140
Gr. Brit. and N. Irel.	57	179	13,263	11,241	293	456	80,343	95,315	1,206	137,664
Greece	0	0	1,402	1,362	0	0	8,111	9,491	0	14,116
Italy	0	0	1,596	2,555	13	18	7,998	8,636	18	22,547
Latvia	0	0	0	35	2	0	18	346	0	575
Norway	0	0	106	276	0	0	2,055	2,449	0	3,294
Netherlands	9	2	1,140	1,347	481	93	10,576	12,286	110	17,875
Portugal	—	—	64	22	—	—	346	500	—	1,393
Sweden	0	2	104	386	11	4	1,574	2,566	9	4,054
Switzerland	0	2	1,120	862	13	9	8,056	8,955	18	12,683
Czechoslovakia	0	0	421	906	2	2	1,786	9,110	4	13,199
India	2	9	395	0	35	168	750	179	183	179
Japan	—	—	1,920	2,361	—	—	7,727	10,408	—	17,070
Syria and Lebanon	2	29	37	15	256	456	130	35	511	328
Egypt	...	...	...	...	2)	2)	0	2)	174	2
Union of South Africa	...	...	...	...	1)	1)	143	1)	791	2
New Zealand	...	...	...	...	1)	1)	683	1)	62	0
Totals	32,103	37,890	30,240	30,563	252,256	309,028	199,136	244,387	427,025	392,725
Rye. — Thousand centals (1 cental = 100 lb.).										
Exporting Countries:										
Bulgaria	4	37	0	0	57	953	0	0	990	0
Hungary	174	172	0	0	714	1,014	0	0	1,486	0
Lithuania	22	0	0	0	24	0	0	2	9	2
Poland	132	320	0	0	4,228	1,889	216	123	2,513	123
Rumania	0	20	0	0	9	1,506	0	0	1,678	0
U. S. S. R.	...	2,000	—	—	4,795	22,754	—	—	23,640	—
Canada	9	137	0	0	1,468	1,938	0	0	5,066	0
United States	0	0	—	—	18	33	—	—	622	—
Argentina	664	1,010	—	—	1,272	2,954	—	—	5,049	—
Turkey	22	110	0	0	240	520	0	0	690	0
Algeria	0	0	0	0	11	11	0	0	31	0
Importing Countries:										
Germany	137	13	551	1,179	2,941	2,015	5,344	3,845	2,046	12,103
Austria	0	0	137	139	0	0	265	1,005	0	1,728
Belgium	46	11	35	126	240	298	1,819	1,545	639	2,709
Denmark	0	0	231	333	0	0	4,169	3,296	0	4,731
Estonia	0	0	0	0	0	0	0	7	0	13
Finland	0	0	33	2	0	0	692	331	0	1,202
France	0	0	9	165	0	0	337	1,199	0	1,737
Italy	0	0	13	13	0	0	207	90	0	157
Latvia	0	0	0	11	0	0	0	75	0	99
Norway	0	0	291	196	0	0	1,927	2,595	—	3,415
Netherlands	2	13	243	287	40	276	2,846	2,769	331	4,193
Sweden	11	0	4	132	11	0	251	842	26	1,334
Switzerland	0	0	66	7	0	0	304	62	0	108
Czechoslovakia	2	0	2	496	51	4	93	4,665	7	5,124
Totals	1,225	3,843	1,615	3,086	16,119	36,165	18,470	22,451	44,823	38,778

1) 2) See notes page 350.

COUNTRIES	MARCH				RIGHT MONTHS (August 1-March 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat flour. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Germany . . . . .	181	7	11	24	1,151	53	49	152	64	229
Belgium . . . . .	4	7	2	2	40	46	55	42	73	51
Bulgaria . . . . .	0	139	0	0	49	542	0	0	752	0
Spain . . . . .	0	2	0	0	4	15	0	0	18	0
France . . . . .	443	370	35	15	2,701	3,990	326	170	4,764	262
Hungary . . . . .	44	168	0	0	688	1,700	0	0	2,130	0
Italy . . . . .	388	150	31	18	2,663	1,634	190	207	2,235	287
Latvia . . . . .	0	0	0	0	0	0	0	0	0	0
Lithuania . . . . .	2	2	0	0	13	20	0	0	26	0
Poland . . . . .	24	33	0	0	190	437	0	4	511	4
Rumania . . . . .	2	26	0	0	13	820	0	0	855	0
Yugoslavia . . . . .	7	2	0	0	49	57	0	0	104	0
Canada . . . . .	961	814	7	4	6,927	7,152	24	29	10,551	46
United States . . . . .	688	1,171	0	0	5,911	11,876	0	0	15,091	0
Argentina . . . . .	359	203	—	—	992	1,129	—	—	1,545	—
Chile . . . . .	—	—	—	—	1	4	110	1	29	0
India . . . . .	22	88	0	0	254	622	2	0	836	0
Turkey . . . . .	0	2	0	0	0	2	0	4	11	4
Japan . . . . .	800	443	0	9	4,348	1,881	11	84	3,470	106
Algeria . . . . .	29	9	15	4	304	783	49	46	157	57
Tunis . . . . .	11	11	11	0	115	82	33	15	146	20
Australia . . . . .	1,733	1,122	0	0	8,957	9,797	0	0	13,995	0
<i>Importing Countries:</i>										
Austria . . . . .	0	0	60	139	0	7	439	791	7	1,261
Denmark . . . . .	0	0	60	101	9	9	518	974	13	1,290
Estonia . . . . .	0	0	0	2	0	9	0	15	11	15
Irish Free State . . . . .	0	2	119	344	0	22	1,281	2,566	26	4,048
Finland . . . . .	0	0	101	93	0	0	814	1,164	0	1,596
Gr. Brit. and N. Irel. . . . .	328	531	893	994	2,967	3,569	5,805	7,939	5,628	11,224
Greece . . . . .	0	0	2	2	0	0	18	55	0	66
Norway . . . . .	0	0	101	71	2	7	708	1,049	11	1,358
Netherlands . . . . .	0	7	77	51	18	62	602	531	71	723
Portugal . . . . .	—	—	7	9	—	—	163	104	—	201
Sweden . . . . .	0	0	0	2	0	0	7	26	0	37
Czechoslovakia . . . . .	0	0	37	139	4	7	298	791	9	1,182
Ceylon . . . . .	—	—	18	20	—	—	273	302	—	401
Java and Madura . . . . .	—	—	—	—	—	—	591	690	—	1,144
Indo-China . . . . .	—	—	24	35	—	—	236	273	—	388
Syria and Lebanon . . . . .	7	4	130	53	68	86	492	240	93	397
Egypt . . . . .	—	—	—	—	0	0	137	1,276	0	2,430
Union of South Africa . . . . .	—	—	—	—	0	0	4	11	2	15
New Zealand . . . . .	—	—	—	—	2	2	163	121	4	238
<b>Totals . . . . .</b>	<b>6,033</b>	<b>5,313</b>	<b>1,741</b>	<b>2,131</b>	<b>38,443</b>	<b>45,721</b>	<b>13,398</b>	<b>19,671</b>	<b>63,238</b>	<b>29,074</b>
<b>Barley. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	29	2	0	88	397	0	0	0	406	0
Spain . . . . .	9	0	0	35	4	0	0	0	15	0
Hungary . . . . .	379	2	0	4	1,151	46	0	4	55	7
Lithuania . . . . .	0	0	0	0	2	0	0	0	0	0
Poland . . . . .	243	203	0	0	3,122	2,802	0	0	3,146	0
Rumania . . . . .	170	269	0	0	8,984	13,477	0	0	15,913	0
Czechoslovakia . . . . .	245	146	0	0	3,239	1,124	2	2	2,112	2
U. S. S. R. . . . .	—	454	—	—	7,630	17,611	—	—	17,789	—
Canada . . . . .	172	165	0	0	2,317	4,081	0	0	6,499	0
United States . . . . .	483	86	—	—	3,272	1,521	—	—	2,524	—
Argentina . . . . .	1,680	1,433	—	—	4,881	5,443	—	—	6,274	—
Chile . . . . .	—	—	—	—	24	203	0	0	492	0
India . . . . .	0	71	0	0	4	298	0	0	666	0
Syria and Lebanon . . . . .	0	0	11	7	31	368	302	77	384	104
Turkey . . . . .	68	183	0	0	679	2,425	0	0	2,996	0
Egypt . . . . .	—	—	—	—	15	0	0	216	2	273
Tunis . . . . .	121	2	2	13	2,326	126	33	542	820	556
Australia . . . . .	101	225	0	0	886	1,356	0	0	1,614	0
<i>Importing Countries:</i>										
Germany . . . . .	2	4	381	1,303	2	18	2,202	10,565	18	15,970
Austria . . . . .	0	0	159	117	0	0	1,314	1,620	0	2,075
Belgium . . . . .	23	148	794	620	1,118	1,151	6,885	7,302	1,676	9,396
Denmark . . . . .	68	7	95	159	304	414	1,444	2,321	474	3,331
Irish Free State . . . . .	0	0	9	4	2	26	18	304	26	483
France . . . . .	0	4	392	644	0	15	6,173	6,735	15	9,482
Gr. Brit. and N. Irel. . . . .	2	0	1,173	679	31	9	9,897	11,499	31	14,039
Greece . . . . .	0	0	0	104	0	0	9	152	0	172
Italy . . . . .	0	0	82	119	0	0	754	571	0	800
Latvia . . . . .	0	0	0	0	0	0	0	4	0	4
Norway . . . . .	0	0	2	11	0	0	90	591	0	794
Netherlands . . . . .	11	37	639	675	55	214	6,078	6,863	262	9,112
Switzerland . . . . .	0	0	661	212	0	0	3,885	2,176	2	2,989
Yugoslavia . . . . .	2	0	0	2	22	13	4	37	13	37
Algeria . . . . .	9	15	106	108	75	578	1,744	2,061	620	2,520
<b>Totals . . . . .</b>	<b>3,917</b>	<b>3,456</b>	<b>4,506</b>	<b>4,781</b>	<b>40,295</b>	<b>53,720</b>	<b>40,834</b>	<b>53,642</b>	<b>64,844</b>	<b>72,146</b>

COUNTRIES	MARCH				EIGHT MONTHS (August 1-March 31)				TWELVE MONTHS August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Oats. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . . .	2	6	0	31	18	62	9	192	73	218
Hungary . . . . .	130	0	0	0	187	4	0	2	7	2
Lithuania . . . . .	0	4	0	0	0	13	0	0	20	0
Poland . . . . .	37	7	0	0	154	26	0	0	62	0
Rumania . . . . .	0	0	0	0	624	212	0	0	293	0
Czechoslovakia . . .	154	68	0	0	2,498	419	0	55	884	57
Yugoslavia . . . . .	0	0	0	0	0	0	0	0	2	0
Canada . . . . .	194	353	97	0	2,959	2,886	672	536	4,628	655
United States . . . .	115	18	0	2	1,105	661	2	11	895	22
Argentina . . . . .	1,565	2,373	—	—	8,045	11,171	—	—	16,380	—
Chile . . . . .	...	...	...	...	115	119	1	0	223	0
Algeria . . . . .	2	37	0	31	115	231	31	342	273	384
Tunis . . . . .	2	4	0	0	86	137	0	0	212	0
Australia . . . . .	2	9	0	0	82	62	0	2	108	2
<i>Importing Countries:</i>										
Germany . . . . .	46	2	104	4	55	7	267	181	9	223
Austria . . . . .	0	0	13	115	0	0	522	959	0	1,464
Belgium . . . . .	0	4	93	123	7	11	467	774	37	1,504
Denmark . . . . .	2	9	55	46	62	66	148	331	66	500
Estoula . . . . .	0	0	0	0	0	0	0	7	0	7
Finland . . . . .	0	2	0	0	2	18	37	40	20	55
France . . . . .	0	0	112	313	4	4	1,001	1,113	7	3,214
Gr. Brit. and N. Irel.	7	86	562	858	20	190	3,997	5,461	203	8,494
Italy . . . . .	0	0	278	569	0	0	1,768	2,568	0	4,074
Latvia . . . . .	0	0	0	0	0	0	0	7	0	7
Norway . . . . .	0	0	0	18	0	2	11	220	2	273
Netherlands . . . . .	13	2	198	249	22	40	1,852	1,583	44	2,383
Sweden . . . . .	2	22	90	90	44	42	353	789	181	1,105
Switzerland . . . . .	0	0	915	560	0	0	3,609	3,183	2	5,033
<b>Totals . . . . .</b>	<b>2,273</b>	<b>3,106</b>	<b>2,517</b>	<b>3,009</b>	<b>16,204</b>	<b>16,383</b>	<b>14,746</b>	<b>18,356</b>	<b>24,631</b>	<b>29,676</b>
<b>Maize. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>					FIVE MONTHS (November 1-March 31)				TWELVE MONTHS (Nov. 1-Oct. 31)	
Bulgaria . . . . .	86	284	0	0	1,473	1,345	0	0	2,890	0
Rumania . . . . .	3,014	2,898	0	0	19,705	16,248	0	0	34,421	2
Yugoslavia . . . . .	930	207	0	4	4,694	1,096	0	24	1,825	26
United States . . . .	185	99	9	22	2,178	597	53	121	3,084	220
Argentina . . . . .	4,438	11,376	—	—	34,785	70,819	—	—	175,713	—
Brazil . . . . .	...	...	—	—	0	0	—	—	2	—
Java and Madura . . .	445	503	—	—	1,032	1,456	—	—	2,467	—
Indo China . . . . .	68	11	—	—	1,836	1,268	—	—	3,459	—
Syria and Lebanon . .	0	0	18	2	4	7	64	7	7	37
Turkey . . . . .	20	44	0	0	71	106	0	0	373	0
Egypt . . . . .	...	...	...	...	22	22	4	13	15	46
Union of South Africa	1,060	0	0	0	3,474	1,411	0	0	4,991	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	769	1,107	0	0	3,997	5,906	0	17,007
Austria . . . . .	0	0	847	397	0	0	5,000	3,203	0	7,630
Belgium . . . . .	99	337	968	924	423	657	7,500	8,497	1,385	18,691
Denmark . . . . .	0	0	1,049	1,265	0	0	6,737	9,076	0	21,231
Spain . . . . .	0	0	295	723	0	0	950	3,031	0	6,931
Irish Free State . . .	0	0	884	1,411	0	0	2,617	5,353	0	13,658
Finland . . . . .	0	0	95	44	0	0	370	190	0	582
France . . . . .	0	7	2	1,614	0	13	7,293	10,437	26	25,869
Gr. Brit. and N. Irel.	176	258	4,729	3,468	712	1,177	24,493	30,849	3,208	64,058
Greece . . . . .	0	0	106	774	0	0	179	2,478	0	3,382
Hungary . . . . .	258	4	0	29	1,133	53	0	243	93	939
Italy . . . . .	0	0	110	1,285	2	2	884	5,736	7	15,737
Norway . . . . .	0	0	176	196	0	0	1,288	1,781	0	4,092
Netherlands . . . . .	11	51	2,145	3,064	46	99	16,462	19,178	223	36,891
Poland . . . . .	0	0	11	0	0	0	31	51	0	126
Portugal . . . . .	—	—	44	60	—	—	392	456	—	1,407
Sweden . . . . .	0	0	505	476	0	0	2,130	2,663	0	6,135
Switzerland . . . . .	0	0	461	269	0	0	1,043	1,720	2	3,717
Czechoslovakia . . .	0	0	119	399	0	0	551	5,758	0	9,958
Canada . . . . .	0	0	143	95	20	4	2,732	2,260	13	3,891
Japan . . . . .	—	—	9	344	—	—	11	1,058	—	1,695
Tunis . . . . .	0	0	0	99	0	0	0	302	0	324
<b>Totals . . . . .</b>	<b>10,790</b>	<b>16,080</b>	<b>13,494</b>	<b>18,071</b>	<b>71,610</b>	<b>96,368</b>	<b>84,781</b>	<b>120,391</b>	<b>234,204</b>	<b>264,285</b>

1) 2) See notes page 350.

COUNTRIES	MARCH				THREE MONTHS (January 1-March 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932

<b>Rice. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Spain . . . . .	11	132	0	0	33	280	0	0	871	0
Italy . . . . .	280	324	22	4	776	1,155	37	11	3,505	55
United States . . . . .	168	265	29	26	509	617	88	75	2,586	190
Brazil . . . . .	...	...	—	—	13	119	—	—	615	—
India . . . . .	6,270	8,250	18	31	11,817	17,547	198	86	48,001	683
Indo-China . . . . .	3,607	2,681	—	—	8,155	7,132	—	—	26,983	—
Siam . . . . .	3,710	3,574	—	—	10,183	8,686	—	—	34,106	—
Egypt . . . . .	...	...	...	...	...	...	...	...	1,032	710
<i>Importing Countries:</i>										
Germany . . . . .	37	42	324	414	157	203	1,329	1,437	1,047	8,481
Austria . . . . .	0	0	44	40	0	0	148	121	0	549
Belgium . . . . .	4	15	110	117	15	68	260	247	201	1,208
Denmark . . . . .	0	0	13	11	0	0	40	26	0	139
Estonia . . . . .	—	—	2	2	—	—	4	4	—	15
Irish Free State . . . . .	0	0	7	4	0	0	15	11	2	46
France . . . . .	73	49	1,204	514	256	190	2,709	1,407	864	8,327
Gr. Brit. and N. Irel. . . . .	13	31	236	317	31	66	386	670	163	2,747
Greece . . . . .	—	—	62	49	—	—	130	143	—	540
Hungary . . . . .	0	0	53	29	0	0	77	95	0	465
Latvia . . . . .	0	0	0	0	0	0	4	2	0	18
Lithuania . . . . .	0	0	0	2	0	0	2	4	0	20
Norway . . . . .	0	0	9	4	0	0	20	13	0	71
Netherlands . . . . .	115	148	448	71	315	430	754	181	1,863	2,784
Poland . . . . .	7	15	0	2	18	71	68	20	317	1,027
Portugal . . . . .	—	—	68	112	—	—	154	207	—	875
Sweden . . . . .	—	—	0	0	—	—	0	0	—	90
Switzerland . . . . .	0	0	75	20	0	0	143	101	0	432
Czechoslovakia . . . . .	0	0	42	37	0	0	165	185	0	1,096
Yugoslavia . . . . .	0	0	60	13	0	0	141	132	2	494
Canada . . . . .	0	0	53	117	0	0	106	183	9	593
Chile . . . . .	—	—	...	...	—	—	9	51	—	187
Ceylon . . . . .	0	0	974	1,116	0	0	2,641	3,234	4	10,386
Java and Madura . . . . .	2	7	...	...	2	11	800	1,078	73	3,303
Japan . . . . .	11	7	262	313	196	18	840	827	1,034	3,369
Syria and Lebanon . . . . .	0	0	26	31	0	0	95	86	0	392
Turkey . . . . .	0	0	11	9	0	0	20	18	0	93
Algeria . . . . .	4	0	33	18	9	0	90	46	9	198
Tunis . . . . .	0	0	7	4	0	0	11	20	0	40
Union of South Africa . . . . .	...	...	...	...	1)	1)	123	95	0	895
Australia . . . . .	7	7	2	7	13	31	15	13	86	49
New Zealand . . . . .	...	...	...	...	1)	1)	11	11	0	64
<b>Totals . . . . .</b>	<b>14,319</b>	<b>15,547</b>	<b>4,194</b>	<b>3,434</b>	<b>32,498</b>	<b>36,624</b>	<b>11,633</b>	<b>10,840</b>	<b>123,373</b>	<b>50,631</b>

<b>Linseed. — Thousand cents (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Estonia . . . . .	0	0	0	0	0	0	9	0	2	4
Lithuania . . . . .	13	20	0	0	26	79	0	0	170	0
Argentina . . . . .	3,411	4,531	—	—	11,497	13,466	—	—	42,188	—
India . . . . .	101	130	0	0	346	459	0	0	1,728	0
Tunis . . . . .	0	2	0	0	2	2	0	0	24	0
<i>Importing Countries:</i>										
Germany . . . . .	4	0	891	902	7	4	2,703	1,841	20	9,841
Belgium . . . . .	15	15	373	399	29	101	1,241	1,021	139	3,673
Denmark . . . . .	—	—	29	57	—	—	108	108	—	534
Spain . . . . .	—	—	33	29	—	—	75	44	—	494
Finland . . . . .	0	0	7	7	0	0	20	13	0	75
France . . . . .	0	0	798	450	2	2	1,561	983	7	5,187
Gr. Brit. and N. Irel. . . . .	0	0	675	902	2	0	1,618	2,150	4	8,294
Greece . . . . .	0	0	4	7	0	0	20	13	0	88
Hungary . . . . .	0	0	7	0	0	2	7	0	9	29
Italy . . . . .	0	0	168	97	0	0	437	313	0	1,512
Latvia . . . . .	4	2	9	26	29	15	18	31	53	75
Norway . . . . .	0	0	9	37	0	0	93	77	0	403
Netherlands . . . . .	13	7	679	1,235	22	62	2,489	2,778	75	9,912
Poland . . . . .	0	0	64	11	0	2	143	29	4	271
Sweden . . . . .	—	—	106	128	—	—	229	220	—	957
Czechoslovakia . . . . .	—	0	20	15	0	2	110	77	2	798
Yugoslavia . . . . .	0	0	15	0	0	0	26	0	0	115
Canada . . . . .	2	2	0	22	4	2	0	22	205	256
United States . . . . .	—	—	410	417	—	—	935	1,437	—	4,502
Japan . . . . .	—	—	31	26	—	—	97	82	—	148
Australia . . . . .	0	0	4	13	0	0	49	194	0	450
<b>Totals . . . . .</b>	<b>3,563</b>	<b>4,709</b>	<b>4,332</b>	<b>4,780</b>	<b>11,966</b>	<b>14,198</b>	<b>11,988</b>	<b>11,433</b>	<b>44,630</b>	<b>47,618</b>

1) See notes page 350.

COUNTRIES	MARCH				THREE-MONTHS (January 1-March 31)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Butter. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Austria . . . . .	7	55	2	2	366	238	4	26	1,565	802
Denmark . . . . .	30,221	27,415	84	51	78,359	82,678	143	342	347,886	922
Estonia . . . . .	670	1,012	0	0	2,202	3,142	0	0	27,626	0
Irish Free State . . . . .	1,825	190	0	1,065	2,612	692	2	2,110	36,932	2,632
Finland . . . . .	2,266	2,884	0	0	6,660	9,198	0	0	32,020	0
Hungary . . . . .	571	194	0	0	1,918	1,069	0	0	4,495	0
Latvia . . . . .	1,797	1,695	0	0	5,569	5,798	0	0	41,000	2
Lithuania . . . . .	996	767	0	0	2,130	1,737	0	0	21,883	0
Norway . . . . .	2	351	0	4	642	1,184	4	11	2,421	90
Netherlands . . . . .	5,805	4,213	90	677	14,229	8,431	251	6,978	44,926	9,323
Poland . . . . .	2	99	0	9	121	1,259	0	9	2,707	866
Sweden . . . . .	2,679	2,557	0	0	7,765	8,706	4	11	29,875	33
U. S. S. R. . . . .	—	—	—	—	—	—	—	—	68,198	—
Argentina . . . . .	4,969	7,333	—	—	14,476	21,539	—	—	55,973	—
India . . . . .	20	26	35	35	66	79	110	121	260	428
Syria and Lebanon . . . . .	0	22	104	174	55	101	359	423	315	1,867
Australia . . . . .	26,440	15,036	0	0	76,534	63,749	0	0	229,105	0
New Zealand . . . . .	36,116	14,564	—	—	81,342	62,473	—	—	244,787	—
<i>Importing Countries:</i>										
Germany . . . . .	2	24	7,751	13,592	2	40	22,291	44,913	478	153,264
Belgium . . . . .	18	254	3,863	5,044	53	452	11,497	17,408	1,841	46,778
Spain . . . . .	0	2	0	7	4	18	2	18	44	42
France . . . . .	542	494	3,622	4,548	1,413	1,814	15,170	7,194	7,921	26,140
Gr. Brit. and N. Irel. . . . .	1,160	7,244	92,822	73,469	2,950	24,515	246,471	234,650	35,693	946,298
Greece . . . . .	—	—	33	231	—	—	110	514	—	1,197
Italy . . . . .	154	110	309	642	293	203	1,133	2,584	827	3,812
Switzerland . . . . .	0	0	130	1,750	0	2	514	4,206	7	8,151
Czechoslovakia . . . . .	0	0	13	287	0	26	15	355	26	2,703
Canada . . . . .	40	152	220	95	110	410	796	157	3,505	238
United States . . . . .	95	139	110	82	289	390	304	342	1,607	1,014
Ceylon . . . . .	—	—	51	37	—	—	146	146	—	602
Java and Madura . . . . .	—	—	—	—	—	—	1,534	1,142	—	8,516
Japan . . . . .	—	—	4	11	—	—	—	44	—	163
Algeria . . . . .	—	2	388	295	9	15	1,001	1,071	35	3,955
Egypt . . . . .	—	—	—	—	—	—	—	—	384	825
Tunis . . . . .	—	—	179	108	—	—	—	—	4	1,305
<b>Totals</b>	<b>116,399</b>	<b>86,834</b>	<b>109,810</b>	<b>102,215</b>	<b>300,171</b>	<b>299,958</b>	<b>302,357</b>	<b>325,075</b>	<b>1,244,346</b>	<b>1,221,968</b>
<b>Cheese. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	170	71	0	0	659	276	0	0	2,601	4
Denmark . . . . .	1,711	800	7	9	4,903	2,694	22	51	14,535	130
Finland . . . . .	494	496	4	2	1,790	1,693	7	4	7,225	26
Italy . . . . .	4,705	5,758	611	582	11,954	16,211	1,706	1,664	66,399	8,805
Lithuania . . . . .	57	108	0	0	302	489	0	0	1,768	7
Norway . . . . .	390	201	18	24	1,019	871	44	73	3,644	240
Netherlands . . . . .	12,811	10,939	82	104	35,170	35,940	198	282	170,061	1,076
Poland . . . . .	22	26	66	40	40	373	134	119	767	586
Switzerland . . . . .	3,170	3,243	280	406	9,442	9,603	785	1,382	43,700	4,755
Czechoslovakia . . . . .	179	531	205	165	829	2,403	551	518	6,124	3,071
Yugoslavia . . . . .	247	97	7	15	470	505	20	49	2,617	150
Canada . . . . .	452	930	66	101	1,122	2,350	192	256	86,940	1,166
Australia . . . . .	1,021	218	7	0	4,482	2,430	13	2	8,801	60
New Zealand . . . . .	26,286	18,514	0	0	71,456	60,111	2	0	192,175	2
<i>Importing Countries:</i>										
Germany . . . . .	421	487	9,409	6,795	1,396	1,149	24,421	22,055	4,237	108,688
Austria . . . . .	328	115	207	452	1,016	190	545	1,056	3,982	3,732
Belgium . . . . .	31	55	3,408	2,937	101	154	10,479	9,914	551	45,605
Spain . . . . .	9	20	121	163	23	40	375	463	238	2,480
Irish Free State . . . . .	0	0	18	183	0	22	159	514	37	2,019
France . . . . .	2,381	2,751	5,099	4,844	6,687	8,281	13,093	12,394	29,211	52,267
Gr. Brit. and N. Irel. . . . .	511	567	33,667	34,002	1,590	1,825	87,627	87,436	7,242	336,733
Greece . . . . .	88	4	62	121	196	7	287	763	620	1,753
Hungary . . . . .	4	7	0	0	11	15	7	88	33	11
Portugal . . . . .	—	—	20	44	—	—	62	229	—	608
Sweden . . . . .	—	—	66	88	—	—	203	229	—	1,045
United States . . . . .	141	146	2,892	4,769	333	417	9,506	12,077	1,534	55,632
India . . . . .	0	0	73	53	0	0	227	205	0	950
Java and Madura . . . . .	—	—	—	—	—	—	270	172	—	1,642
Syria and Lebanon . . . . .	0	2	223	99	4	4	420	278	68	1,195
Algeria . . . . .	13	22	1,003	642	40	46	2,842	1,889	159	10,033
Egypt . . . . .	—	—	—	—	—	—	—	—	254	5,260
Tunis . . . . .	—	—	229	170	—	—	—	—	13	2,191
<b>Totals</b>	<b>55,644</b>	<b>46,111</b>	<b>57,850</b>	<b>56,810</b>	<b>155,048</b>	<b>148,099</b>	<b>154,831</b>	<b>154,469</b>	<b>655,536</b>	<b>651,922</b>

1) See notes page 350.



COUNTRIES	MARCH				EIGHT MONTHS (August 1-March 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Cotton. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
United States . . .	2,668	4,991	66	51	32,878	36,749	443	291	46,787	620
Argentina . . .	13	9	—	—	298	267	—	—	584	—
Brazil . . .	—	—	—	—	2	176	—	—	183	—
India . . .	1,265	672	185	256	6,438	5,265	487	838	7,075	2,249
Egypt . . .	—	—	—	—	2,575	3,430	0	0	7,500	0
<i>Importing Countries:</i>										
Germany . . .	0	108	787	855	908	1,160	6,144	5,776	1,640	8,327
Austria . . .	—	—	33	53	0	0	276	403	0	553
Belgium . . .	24	26	130	90	174	249	1,332	1,023	348	1,349
Denmark . . .	—	—	13	15	—	—	90	88	—	134
Spain . . .	0	4	172	146	11	13	1,248	1,303	22	2,048
Estonia . . .	0	0	4	4	0	0	40	44	0	75
Finland . . .	0	0	13	11	0	0	119	104	0	159
France . . .	33	26	741	355	234	373	5,146	2,403	494	4,286
Gr. Brit. and N. Irel.	40	29	1,063	1,455	317	269	8,662	8,843	485	12,452
Greece . . .	0	0	22	11	0	0	115	134	0	192
Hungary . . .	0	0	37	79	0	0	273	280	0	333
Italy . . .	0	0	386	454	0	0	2,921	2,765	0	4,037
Latvia . . .	0	0	4	2	0	0	49	37	0	51
Norway . . .	0	0	4	2	0	0	42	29	0	44
Netherlands . . .	0	0	75	71	4	7	525	655	7	858
Poland . . .	2	2	64	64	15	15	778	697	22	1,074
Portugal . . .	—	—	42	31	—	—	304	254	—	434
Sweden . . .	—	—	35	40	—	—	359	388	—	564
Switzerland . . .	0	0	44	51	2	4	388	368	4	505
Czechoslovakia . . .	4	11	161	179	75	97	1,292	1,411	137	2,002
Yugoslavia . . .	0	0	4	18	0	0	117	146	0	201
Canada . . .	—	—	64	106	—	—	692	701	—	974
Japan . . .	0	101	1,662	2,837	302	571	5,534	10,659	1,041	16,484
Algeria . . .	0	0	0	0	2	2	4	4	4	7
<b>Totals</b> . . .	<b>4,135</b>	<b>5,979</b>	<b>5,811</b>	<b>7,236</b>	<b>44,235</b>	<b>48,647</b>	<b>37,380</b>	<b>39,644</b>	<b>66,333</b>	<b>60,012</b>

**Wool. — (Thousand lb.).**

COUNTRIES	MARCH				EIGHT MONTHS (August 1-March 31)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wool. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . .	615	538	15	57	7,262	6,621	450	500	9,949	948
Hungary . . .	203	11	337	82	1,711	1,179	1,008	844	2,344	1,285
Argentina . . . { a)	23,658	27,968	—	—	188,564	155,367	—	—	249,842	—
Argentina . . . { b)	1,312	739	—	—	9,169	5,135	—	—	8,115	—
Chile . . .	—	—	—	—	7,917	14,405	—	—	23,532	—
India . . .	4,043	4,165	908	545	25,660	25,183	4,658	2,604	35,402	5,020
Syria and Lebanon .	137	150	57	13	2,147	2,418	946	434	3,935	985
Algeria . . .	452	395	134	57	4,012	3,706	1,063	778	6,856	1,252
Egypt . . .	—	—	—	—	723	723	0	0	1,413	4
Un. of S. Africa. { a)	21,960	45,019	—	—	205,147	201,265	0	0	298,046	0
Un. of S. Africa. { b)	522	461	—	—	3,697	2,798	302	657	5,296	1,261
Australia . . . { a)	97,808	80,135	251	551	671,521	597,265	3,693	1,713	762,756	2,008
Australia . . . { b)	5,615	4,916	0	0	41,178	35,303	24	7	58,535	15
New Zealand. { a)	54,942	36,167	—	—	161,366	120,726	0	2	177,836	2
New Zealand. { b)	7,500	4,131	—	—	31,396	23,627	9	13	43,314	29
<i>Importing Countries:</i>										
Germany . . . { a)	150	165	26,330	21,317	1,938	8,744	176,245	119,570	9,780	241,314
Germany . . . { b)	635	611	2,840	2,641	5,016	6,709	21,321	18,543	9,681	31,656
Austria . . .	11	4	1,316	952	44	55	9,550	8,270	82	14,002
Belgium . . . { a)	6,905	578	21,420	12,743	58,121	6,169	118,391	60,685	18,715	116,938
Belgium . . . { b)	1,790	1,810	397	207	11,521	13,625	2,313	1,903	22,465	3,036
Denmark . . .	22	9	564	346	150	115	3,190	2,694	157	4,409
Spain . . .	42	229	254	1,651	1,422	1,664	5,584	3,402	2,321	11,715
Finland . . .	11	4	287	260	51	79	2,284	1,442	86	2,762
France . . .	2,972	2,665	55,451	34,846	21,065	29,024	335,481	196,984	45,631	393,116
Gr. Brit. and N. Irel.	31,760	30,589	132,811	121,991	236,142	162,472	577,734	518,355	315,628	888,010
Greece . . .	20	9	269	163	439	71	1,272	1,530	300	2,094
Italy . . . { a)	77	82	24,321	14,839	276	933	92,008	76,988	1,232	145,076
Italy . . . { b)	245	44	1,515	1,107	2,200	1,109	9,169	9,647	1,620	14,290
Norway . . .	79	55	187	205	474	478	1,239	1,420	756	2,355
Netherlands . . { a)	203	64	999	840	1,475	1,230	5,291	4,434	1,933	7,229
Netherlands . . { b)	137	31	908	767	575	368	5,584	4,537	761	8,148
Poland . . .	236	104	2,892	1,938	941	1,272	19,758	14,357	1,687	27,084
Sweden . . .	—	—	1,757	2,083	—	—	10,353	10,860	—	17,745
Switzerland . . .	26	22	1,523	2,072	172	353	12,123	10,789	397	20,150
Czechoslovakia . .	71	71	2,101	2,734	816	1,457	17,443	19,449	1,892	32,038
Yugoslavia . . .	0	0	450	337	132	84	2,035	1,975	152	2,937
Canada . . .	196	168	1,362	1,830	2,804	3,944	5,320	4,535	5,159	6,277
United States . . .	4	64	4,451	6,422	359	622	30,907	71,523	3,893	82,779
Japan . . .	0	0	28,464	24,244	37	35	140,902	112,721	77	192,901
Tunis . . .	9	2	55	22	62	68	370	256	172	465
<b>Totals</b> . . .	<b>264,368</b>	<b>242,196</b>	<b>314,626</b>	<b>257,862</b>	<b>1,708,251</b>	<b>1,436,401</b>	<b>1,618,027</b>	<b>1,284,421</b>	<b>2,131,748</b>	<b>2,281,335</b>

a) = Wool, grey; b) = Wool, scoured. — 1) 2) See notes page 350.

COUNTRIES	MARCH		NINE MONTHS (July 1-March 31)		TWELVE MONTHS (July 1- June 30)	COUNTRIES	FEBRUARY		NINE MONTHS (July 1-March 31)		TWELVE MONTHS (July 1- June 30)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32
<b>Coffee. — (Thousand lb.).</b>						<b>Tea. — (Thousand lb.).</b>					
<b>EXPORTS.</b>						<b>EXPORTS</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	...	...	1,964,834	1,413,256	2,021,602	Ceylon . . . . .	30,225	18,938	178,833	163,806	245,982
India . . . . .	5,340	2,937	11,949	10,767	17,926	India . . . . .	13,464	5,016	338,726	309,175	342,950
Java and Madura .	2,121	3,111	73,650	37,615	51,725	Java and Madura .	23,863	13,658	125,450	120,831	163,312
						Japan . . . . .	855	800	24,108	20,926	24,590
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	64	20	1,069	1,365	1,649	Belgium . . . . .	0	0	7	18	22
Belgium . . . . .	22	767	346	9,057	9,643	Irish Free State .	0	31	20	209	258
France . . . . .	0	0	60	13	15	France . . . . .	2	2	13	31	35
Netherlands . . . .	1,034	1,380	12,983	10,794	14,709	Gr. Brit. and N. Irel.	8,073	7,837	65,766	67,404	80,092
Portugal . . . . .	187	183	1,541	873	1,270	Netherlands . . . .	18	11	104	115	141
Switzerland . . . . .	22	40	254	520	613	United States . . .	18	60	249	403	474
Canada . . . . .	7	2	37	31	42	Syria and Lebanon .	0	2	0	7	20
United States . . . .	609	6,953	9,169	17,489	22,593	Algeria . . . . .	2	0	29	31	49
Ceylon . . . . .	2	0	4	11	11	Union of S. Africa .	...	...	9	110	121
Syria and Lebanon .	2	4	9	11	46	Australia . . . . .	179	42	600	445	549
Australia . . . . .	4	2	37	37	55	New Zealand . . . .	...	...	68	53	148
<b>Totals . . . . .</b>	—	—	—	—	2,141,899	<b>Totals . . . . .</b>	76,699	46,397	733,982	683,564	858,743
<b>IMPORTS</b>						<b>IMPORTS</b>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	22,353	17,891	204,471	237,500	307,608	Germany . . . . .	798	895	7,734	8,214	10,494
Austria . . . . .	974	1,473	10,463	12,681	17,456	Austria . . . . .	130	66	787	873	1,133
Belgium . . . . .	6,332	7,183	77,116	101,678	114,709	Belgium . . . . .	60	97	485	540	661
Bulgaria . . . . .	108	203	620	1,188	1,658	Denmark . . . . .	104	104	979	994	1,380
Denmark . . . . .	5,701	6,316	33,773	51,703	66,439	Spain . . . . .	24	22	201	225	280
Spain . . . . .	3,507	4,974	31,720	38,299	48,019	Estonia . . . . .	7	7	55	121	172
Estonia . . . . .	9	20	64	207	298	Irish Free State .	2,302	2,266	17,099	19,579	25,122
Irish Free State . .	130	104	397	368	522	Finland . . . . .	24	13	172	207	249
Finland . . . . .	3,053	1,951	24,459	24,481	32,481	France . . . . .	309	300	2,449	2,553	3,419
France . . . . .	35,193	39,672	319,618	316,722	427,557	Gr. Britain and N.	35,221	32,648	469,502	458,770	550,364
Gr. Britain and N.						Ireland . . . . .					
Ireland . . . . .	2,974	2,948	26,687	27,456	36,648	Greece . . . . .	18	55	293	531	699
Greece . . . . .	902	780	6,272	10,296	13,010	Hungary . . . . .	18	33	509	494	562
Hungary . . . . .	172	432	5,011	4,583	6,041	Italy . . . . .	24	31	198	249	333
Italy . . . . .	5,485	8,095	62,435	70,206	93,366	Latvia . . . . .	11	4	88	108	128
Latvia . . . . .	35	11	225	322	375	Lithuania . . . . .	15	4	88	88	119
Lithuania . . . . .	29	4	273	410	445	Norway . . . . .	40	22	300	302	386
Norway . . . . .	3,622	2,275	26,259	27,408	38,189	Netherlands . . . .	1,526	2,522	24,410	22,761	30,836
Netherlands . . . .	8,294	7,427	77,327	81,018	103,379	Poland . . . . .	373	218	2,917	3,452	4,317
Poland . . . . .	1,431	485	11,475	14,152	17,185	Portugal . . . . .	49	77	317	505	648
Portugal . . . . .	1,426	822	8,583	8,636	10,657	Sweden . . . . .	108	73	655	692	858
Sweden . . . . .	8,475	3,973	72,380	87,548	107,586	Switzerland . . . .	117	148	1,819	1,334	1,792
Switzerland . . . .	1,272	2,912	30,785	24,853	34,286	Czechoslovakia . .	37	99	1,239	1,468	1,737
Czechoslovakia . .	1,702	3,069	20,481	24,412	32,386	Yugoslavia . . . .	24	29	366	525	622
Yugoslavia . . . . .	1,387	1,237	10,534	13,162	17,434	Canada . . . . .	9,579	9,125	35,067	35,680	39,031
Canada . . . . .	5,701	4,330	22,787	23,797	31,963	United States . . .	6,634	7,465	74,600	72,843	90,460
United States . . . .	146,357	161,059	1,051,077	1,242,571	1,629,014	Chile . . . . .	...	...	3,053	3,693	5,170
Chile . . . . .	...	...	3,607	6,402	9,308	Syria and Lebanon .	2	26	174	456	586
Ceylon . . . . .	201	170	2,132	3,441	3,572	Turkey . . . . .	220	157	1,759	1,107	1,504
Japan . . . . .	500	511	3,049	4,081	6,724	Algeria . . . . .	600	196	3,258	1,898	10,421
Syria and Lebanon .	108	198	1,543	1,739	2,324	Egypt . . . . .	...	...	10,260	7,668	13,999
Turkey . . . . .	1,038	441	8,869	6,323	8,841	Tunis . . . . .	231	198	1,991	5,957	6,669
Algeria . . . . .	2,321	3,472	22,926	22,893	30,532	Union of S. Africa .	...	...	7,632	8,916	12,683
Egypt . . . . .	...	...	7,959	7,679	15,862	Australia . . . . .	4,191	4,068	37,582	33,962	44,899
Tunis . . . . .	280	348	2,641	2,350	3,190	New Zealand . . . .	...	...	7,465	7,375	2,522
Un. of S. Africa . .	...	...	19,978	19,299	26,026						
Australia . . . . .	452	176	2,169	2,083	3,510						
New Zealand . . . .	...	...	187	265	452						
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
India . . . . .	0	0	110	60	106	India . . . . .	223	249	4,908	5,545	6,486
						Java and Madura .	...	...	4,079	7,513	9,771
<b>Totals . . . . .</b>	271,324	284,962	2,210,461	2,522,272	3,299,158	<b>Totals . . . . .</b>	63,019	61,217	724,490	717,198	880,510

1) 2) See notes page 350.

COUNTRIES	MARCH		SIX MONTHS (Oct. 1-March 31)		TWELVE MONTHS (Oct. 1- Sept. 30)	COUNTRIES	MARCH		EIGHT MONTHS (August 1-March 31)		TWELVE MONTHS (August 1- July 31)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32
<b>Cacao. — (Thousand lb.).</b>						<b>Total Wheat and Flour *)</b>					
<b>EXPORTS.</b>						<b>(Thousand cents).</b>					
<i>Exporting Countries:</i>						<i>a) NET EXPORTS.</i>					
Grenada . . . . .	...	...	1) 3,042	1) 4,941	9,658	Germany . . . . .	4) 18	4) 774	1,389	4) 5,382	4) 6,691
Dominican Republ. . . . .	...	...	1) 13,036	1) 9,420	35,975	Bulgaria . . . . .	0	2	7	4) 7	4) 4)
Brazil . . . . .	...	...	1) 115,335	1) 108,318	210,683	Hungary . . . . .	384	331	3,104	8,966	10,752
Ecuador . . . . .	...	...	3) 3,527	3) 69,225	37,765	Lithuania . . . . .	4	9	20	44	55
Trinidad . . . . .	...	...	2) 18,545	2) 14,332	39,617	Poland . . . . .	82	302	24	494	1,929
Venezuela . . . . .	...	...	2) 6,393	2) 2,590	35,439	Rumania . . . . .	0	362	33	20,973	22,335
Ceylon . . . . .	569	1,605	5,655	7,031	9,266	U. S. S. R. . . . .	...	6) 62	6) 9,464	6) 39,683	6) 39,820
Java and Madura . . . . .	53	46	1,323	1,614	3,366	Yugoslavia . . . . .	11	417	564	7,333	8,935
Cameroon . . . . .	3,472	1,607	26,850	18,561	27,315	Canada . . . . .	10,161	7,024	117,681	84,005	123,625
Ivory Coast . . . . .	...	...	1) 28,133	1) 27,966	54,578	United States . . . . .	717	4,577	15,659	47,122	65,566
Gold Coast . . . . .	40,971	43,784	352,179	364,454	462,878	Argentina . . . . .	10,774	15,571	43,427	56,439	83,679
Nigeria . . . . .	...	...	1) 109,724	1) 71,119	123,929	Chile . . . . .	...	...	4) 20	4) 20	4) 46
St. Thomas and Prince Is. . . . .	...	...	2) 7,240	2) 10,000	25,867	India . . . . .	...	126	4) 818	1,118	1,118
Togoland . . . . .	2,970	2,690	11,766	12,031	13,916	Syria and Lebanon . . . . .	4) 20	4) 161	99	644	922
<i>Importing Countries:</i>						Turkey . . . . .	267	326	3,620	1,647	3,508
Germany . . . . .	24	0	44	459	496	Algeria . . . . .	73	198	2,310	1,603	5,104
Belgium . . . . .	0	170	459	529	1,508	Tunis . . . . .	13,528	11,524	65,786	60,704	92,453
France . . . . .	0	0	60	2	4	<b>Totals . . . . .</b>					
Netherlands . . . . .	141	282	1,594	4,004	6,740		36,039	41,766	264,444	336,093	466,538
United States . . . . .	858	675	5,580	4,182	7,011						
Australia . . . . .	0	0	2	119	143						
<b>Totals . . . . .</b>	<b>49,058</b>	<b>50,859</b>	<b>710,487</b>	<b>730,897</b>	<b>1,106,154</b>						
<b>IMPORTS.</b>						<i>b) NET IMPORTS.</i>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	19,513	13,838	93,822	107,191	175,744	Germany . . . . .	807	858	5) 4,279	13,913	13,913
Austria . . . . .	635	1,345	4,184	7,011	13,651	Austria . . . . .	661	683	4,639	5,620	8,113
Belgium . . . . .	1,501	2,165	8,968	12,031	21,588	Belgium . . . . .	2,299	1,605	15,666	17,099	27,862
Bulgaria . . . . .	73	101	304	679	1,323	Denmark . . . . .	534	637	5,249	7,970	10,412
Denmark . . . . .	950	690	3,922	3,920	7,756	Spain . . . . .	5) 0	5) 20	5) 0	15	6,457
Spain . . . . .	2,463	2,282	11,927	10,132	19,701	Estonia . . . . .	0	20	0	190	262
Estonia . . . . .	75	26	172	375	452	Irish Free State . . . . .	1,246	1,133	7,101	7,745	11,715
Irish Free State . . . . .	406	331	1,539	805	1,149	Finland . . . . .	212	141	1,695	1,817	2,555
Finland . . . . .	49	11	126	108	181	France . . . . .	1,495	3,613	14,480	23,528	47,137
France . . . . .	7,277	8,001	50,102	46,218	91,214	Gr. Brit. and N. Irel. . . . .	13,958	11,680	83,833	100,685	143,918
Gr. Brit. and N. Irel. . . . .	19,149	16,601	86,973	77,696	138,407	Greece . . . . .	1,404	1,365	8,135	9,564	14,204
Greece . . . . .	243	243	1,334	1,984	2,844	Italy . . . . .	1,120	2,379	4,687	6,715	19,930
Hungary . . . . .	818	269	3,468	3,139	5,573	Latvia . . . . .	0	35	15	346	575
Italy . . . . .	1,698	1,601	8,737	8,201	15,053	Norway . . . . .	240	370	2,996	3,840	5,090
Latvia . . . . .	64	95	478	930	1,607	Netherlands . . . . .	1,235	1,404	10,873	12,820	18,636
Lithuania . . . . .	134	37	386	298	615	Portugal . . . . .	73	33	564	639	1,660
Norway . . . . .	1,071	443	2,765	3,287	5,033	Sweden . . . . .	104	386	1,572	2,597	4,096
Netherlands . . . . .	11,654	8,942	59,353	57,071	92,202	Switzerland . . . . .	6) 1,120	6) 860	6) 8,042	6) 8,946	6) 12,666
Poland . . . . .	1,396	966	6,938	6,036	11,444	Czechoslovakia . . . . .	472	1,091	2,174	10,155	14,758
Portugal . . . . .	119	77	551	547	855	Chile . . . . .	...	...	1) 743	5) 5)	5) 5)
Sweden . . . . .	1,052	672	4,923	6,263	10,481	Ceylon . . . . .	24	26	368	408	542
Switzerland . . . . .	3,183	2,191	10,058	6,550	11,197	India . . . . .	364	5) 379	5) 379	5) 379	5) 379
Czechoslovakia . . . . .	1,482	1,828	9,625	8,812	21,526	Indo-China . . . . .	33	46	315	364	518
Yugoslavia . . . . .	121	152	467	664	1,501	Japan . . . . .	853	1,781	1,944	8,012	12,584
Canada . . . . .	1,347	1,817	9,244	8,477	16,444	Java and Madura . . . . .	...	...	1) 787	1) 787	1,497
United States . . . . .	32,415	83,428	272,722	259,741	420,143	Syria and Lebanon . . . . .	201	51	439	5) 802	1,049
Japan . . . . .	223	234	1,285	908	1,960	Egypt . . . . .	...	...	2) 181	2) 181	4,231
Australia . . . . .	1,609	531	8,115	6,142	11,522	Union of S. Africa . . . . .	...	...	1) 150	1) 150	802
New Zealand . . . . .	...	...	1,235	829	1,554	New Zealand . . . . .	...	...	1) 897	1) 897	569
<b>Totals . . . . .</b>	<b>110,700</b>	<b>148,917</b>	<b>663,723</b>	<b>646,045</b>	<b>1,102,450</b>	<b>Totals . . . . .</b>	<b>28,455</b>	<b>30,197</b>	<b>177,924</b>	<b>237,171</b>	<b>385,172</b>

\*) Flour reduced to grain on the basis of the coefficient, 1,000 cents of flour = 1,333.33 cents of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 28 February. — 2) Data up to 31 December. — 3) Data up to 31 January. — 4) See Net Imports. — 5) See Net Exports. — 6) Wheat only.

# STOCKS

TOTAL STOCKS <sup>1)</sup> OF UNITED STATES WHEAT AND WHEAT-FLOUR ON 1ST APRIL.

LOCATION	1933	1932	1931	1933	1932	1931
	1,000 centals			1,000 bushels		
On farms . . . . .	107,012	99,542	69,404	178,354	165,903	115,673
In interior mills and elevators . . . . .	59,278	41,596	43,352	98,796	69,327	72,253
Commercial wheat in store . . . . .	81,331	124,329	128,150	135,552	207,215	213,583
In mills and mill elevators attached to mills . . . . .	49,915	44,122	33,862	83,192	73,537	56,436
In transit and bought to arrive . . . . .	6,278	5,173	4,908	10,464	8,621	8,180
Stored for others . . . . .	13,988	7,219	10,750	23,314	12,032	17,916
<i>Total U. S. wheat as grain . . .</i>	<i>317,802</i>	<i>321,981</i>	<i>290,426</i>	<i>529,672</i>	<i>536,635</i>	<i>484,041</i>
Flour (in terms of wheat) in merchant mills . . . . .	10,485	11,048	7,980	17,475	18,414	13,300
<b>TOTAL U. S. WHEAT . . .</b>	<b>328,287</b>	<b>333,029</b>	<b>298,406</b>	<b>547,147</b>	<b>555,049</b>	<b>497,341</b>

<sup>1)</sup> Incomplete data: wheat in transit with other destination than merchant mills and attached elevators and wheat-flour in other positions than in these mills, etc. are not included, while data concerning these mills refer only to stocks in mills having a capacity of somewhat more than 90 % of all commercial mills.

QUANTITIES OF CEREALS ON OCEAN PASSAGE WITH FIRST DESTINATION FOR EUROPE.

PRODUCTS	Saturday nearest to 1st of month					Saturday nearest to 1st of month				
	May 1933	April 1933	March 1933	May 1932	May 1931	May 1933	April 1933	March 1933	May 1932	May 1931
	1,000 centals					1,000 bushels				
Wheat (and flour in terms of wheat) . . . . .	25,528	31,435	36,230	32,909	28,834	40,880	52,392	60,384	54,848	48,056
Rye, . . . . .	893	614	576	2,208	1,315	1,594	1,097	1,029	3,943	2,349
Barley, . . . . .	1,948	2,272	2,828	1,816	3,532	4,058	4,733	5,892	3,783	7,358
Oats . . . . .	995	1,843	1,354	3,069	1,824	3,110	5,760	4,230	9,590	5,700
Maize . . . . .	10,522	7,978	9,615	19,435	14,971	18,789	14,246	17,169	34,706	26,374

Authority: Broomhall's Corn Trade News.

## COMMERCIAL CEREALS IN STORE IN CANADA AND THE UNITED STATES.

SPECIFICATION	Friday or Saturday nearest to 1st of month					Friday or Saturday nearest to 1st of month				
	May 1933	April 1933	March 1933	May 1932	May 1931	May 1933	April 1933	March 1933	May 1932	May 1931
	1,000 centals					1,000 bushels				
<b>WHEAT:</b>										
Canadian in Canada . . . .	131,884	135,317	134,121	95,989	91,853	219,807	225,529	223,535	159,982	153,088
U. S. in Canada . . . . .	3,230	3,842	3,932	16,123	3,538	5,348	6,403	6,554	26,872	5,897
U. S. in the United States . .	74,637	81,331	88,279	111,929	123,894	124,395	135,552	147,132	186,549	206,490
Canad. in the United States .	1,498	3,595	4,675	2,771	1,660	2,497	5,992	7,792	4,619	2,766
Total . . . . .	211,249	224,085	231,007	226,812	220,945	352,083	373,476	385,013	378,022	368,241
<b>RYE:</b>										
Canadian in Canada . . . .	2,895	2,873	2,860	5,793	7,423	5,169	5,131	5,108	10,345	13,255
U. S. in Canada . . . . .	55	55	55	119	1,181	99	99	99	213	2,109
U. S. in the United States . .	4,483	4,305	4,353	5,316	6,154	8,006	7,688	7,774	9,493	10,990
Canad. in the United States .	304	304	305	445	153	543	543	545	794	273
Total . . . . .	7,737	7,537	7,573	11,673	14,911	13,817	13,461	13,526	20,845	26,627
<b>BARLEY:</b>										
Canadian in Canada . . . .	3,122	3,265	3,206	3,816	11,065	6,505	6,802	6,679	7,949	23,053
U. S. in Canada . . . . .	10	10	10	12	117	21	21	21	25	243
U. S. in the United States . .	4,608	4,727	4,858	1,791	3,513	9,599	9,848	10,121	3,732	7,319
Canad. in the United States .	0	0	0	611	367	0	0	0	1,272	764
Total . . . . .	7,740	8,002	8,074	6,230	15,062	16,125	16,671	16,821	12,978	31,379
<b>OATS: (1)</b>										
Canadian in Canada . . . .	3,638	4,132	3,321	3,758	4,037	11,369	12,911	10,377	11,745	12,615
U. S. in Canada . . . . .	108	54	133	25	279	336	168	416	78	872
U. S. in the United States . .	7,001	7,742	8,266	4,359	4,458	21,878	24,195	25,831	13,621	13,930
Canad. in the United States .	0	0	0	0	25	0	0	0	1	78
Total . . . . .	10,747	11,928	11,720	8,142	8,799	33,583	37,274	36,624	25,445	27,495
<b>MAIZE:</b>										
U. S. in Canada . . . . .	777	875	1,244	589	267	1,387	1,562	2,221	1,051	476
Of other origin in Canada . .	724	916	997	676	439	1,293	1,635	1,780	1,207	784
U. S. in the United States . .	17,896	20,245	20,646	12,338	11,030	31,958	36,151	36,868	22,032	19,697
Total . . . . .	19,397	22,036	22,887	13,603	11,736	34,638	39,348	40,869	24,290	20,957

1) For oats the bushel is of 32 lbs.

## STOCKS (TOTAL AND QUANTITIES FOR SALE) IN FARMERS' HANDS IN GERMANY.

PRODUCTS	% Total stocks : total production				% Quantities intended for sale : total production			
	15 April 1933	15 March 1933	15 April 1932	15 April 1931	15 April 1933	15 March 1933	15 April 1932	15 April 1931
Winter wheat . . . . .	21.3	26.9	10.4	8.7	17.1	21.5	7.1	5.3
Spring wheat . . . . .	30.3	44.8	19.8	13.9	26.0	33.8	14.7	10.0
Winter rye . . . . .	20.8	27.4	12.2	18.2	9.7	13.6	3.4	7.2
Winter barley . . . . .	9.1	12.0	6.9	7.4	1.3	1.7	0.8	0.7
Spring barley . . . . .	12.2	21.4	12.8	8.6	3.8	6.5	4.0	1.3
Oats . . . . .	32.3	44.9	28.8	32.0	4.9	9.0	3.9	5.2
Potatoes . . . . .	23.9	34.9	21.9	21.9	5.4	10.3	3.9	3.2

Authority: Preisberichtsstelle beim Deutschen Landwirtschaftsrat.

## STOCKS OF CEREALS IN COMMERCIAL ELEVATORS AND MILLS IN GERMANY 1).

PRODUCTS	Last day of the month				Last day of the month			
	April 1933	March 1933	February 1933	April 1932	April 1933	March 1933	February 1933	April 1932
	1,000 centals				1,000 bushels or barrels			
WHEAT:								
Grain . . . . .	14,339	15,245	14,886	9,588	23,898	25,408	24,809	15,980
Flour for bread . . . .	2,743	3,089	3,009	2,776	1,399	1,576	1,535	1,416
TOTAL 2) . . . . .	17,996	19,363	18,898	13,289	29,991	32,272	31,495	22,147
RYE:								
Grain . . . . .	13,237	13,761	13,276	8,201	23,637	24,574	23,708	14,645
Flour for bread . . . .	1,455	1,605	1,552	1,316	742	819	792	672
TOTAL 2) . . . . .	15,177	15,902	15,346	9,956	27,100	28,396	27,404	17,781
BARLEY . . . . .	2,033	2,447	3,018	2,046	4,235	5,098	6,288	4,262
OATS . . . . .	1,898	2,266	2,253	1,720	5,932	7,082	7,041	5,374

1) See note under the corresponding table in the Bulletin for March, 1932 on page 218. — 2) Including flour in terms of grain, on the basis of the coefficient; 1,000 centals of flour = 1,333.33 centals of grain (1,000 barrels of flour = 4,355.55 bushels of wheat or 4,584.80 bushels of rye).

## GRAIN AND FLOUR STOCKS AT THE PORTS OF GREAT BRITAIN AND IRELAND 1).

PRODUCTS	First of the month					First of the month				
	May 1933	April 1933	March 1933	May 1932	May 1931	May 1933	April 1933	March 1933	May 1932	May 1931
	1,000 centals					1,000 bushels				
WHEAT:										
Grain . . . . .	6,864	5,400	3,384	7,896	5,400	11,440	9,000	5,640	13,160	9,000
Flour as grain . . . .	672	624	456	768	552	1,120	1,040	760	1,280	920
TOTAL . . . . .	7,536	6,024	3,840	8,664	5,952	12,560	10,040	6,400	14,440	9,920
Barley . . . . .	880	820	720	800	840	1,833	1,708	1,500	1,667	1,750
Oats . . . . .	576	448	288	464	608	1,800	1,400	900	1,450	1,900
Maize . . . . .	1,608	2,232	2,496	2,640	1,560	2,871	3,986	4,457	4,714	2,786

1) Imported cereals.

Authority: Broomhall's Corn Trade News.

## STOCKS OF COTTON ON HAND IN THE UNITED-STATES.

LOCATION	Last day of the month					Last day of the month				
	April 1933	March 1933	Feb. 1933	April 1932	April 1931	April 1933	March 1933	Feb. 1933	April 1932	April 1931
	1,000 centals					1,000 bales (counting round as half bales)				
In consuming estab- lishments . . . . .	6,723	6,600	7,088	7,535	6,634	1,368	1,343	1,442	1,533	1,371
In public storage and at compresses . . . .	40,102	43,811	46,144	40,164	29,222	8,152	8,906	9,380	8,164	6,033
TOTAL . . . . .	46,825	50,411	53,232	47,699	35,856	9,520	10,249	10,822	9,697	7,404

## STOCKS OF COTTON AT BOMBAY AND AT ALEXANDRIA.

PORTS	Thursday nearest to 1st of month					Thursday nearest to 1st of month				
	May 1933	April 1933	March 1933	May 1932	May 1931	May 1933	April 1933	March 1933	May 1932	May 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs.)				
Bombay 1) . . . .	3,697	3,152	2,596	3,024	4,024	773	659	543	633	842
Alexandria . . . .	3,611	3,778	3,961	4,676	4,955	755	790	829	978	1,037

1) Stocks held by exporters, dealers and mills.

Authorities: East Indian Cotton Ass. and Commission de la Bourse de Minet-el-Basal.

## STOCKS OF COTTON IN EUROPE.

COUNTRIES, PORTS, DESCRIPTIONS	Thursday or Friday nearest to 1st of month					Thursday or Friday nearest to 1st of month				
	May 1933	April 1933	March 1933	May 1932	May 1931	May 1933	April 1933	March 1933	May 1932	May 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs.)				
<b>Great Britain:</b>										
American . . . .	2,230	2,451	2,436	2,022	2,508	467	513	510	423	525
Argentine, Brazil- ian, etc. . . . .	88	106	122	40	208	18	22	26	8	44
Peruvian, etc. . . .	172	209	241	142	236	36	44	50	30	49
East Indian, etc.	286	283	300	481	844	60	59	63	101	176
Egyptian, Sudan- ese . . . . .	1,246	1,302	1,296	1,714	1,396	261	272	271	358	292
Other 1) . . . . .	140	89	83	104	237	29	19	17	22	50
<b>TOTAL . . . .</b>	<b>4,162</b>	<b>4,440</b>	<b>4,478</b>	<b>4,503</b>	<b>5,429</b>	<b>871</b>	<b>929</b>	<b>937</b>	<b>942</b>	<b>1,136</b>
<b>Bremen:</b>										
American . . . .	2,526	2,601	2,544	1,460	4,427	528	544	532	305	508
Other . . . . .	85	79	97	23	48	18	17	21	5	10
<b>TOTAL . . . .</b>	<b>2,611</b>	<b>2,680</b>	<b>2,641</b>	<b>1,483</b>	<b>2,475</b>	<b>546</b>	<b>561</b>	<b>553</b>	<b>310</b>	<b>518</b>
<b>Le Havre:</b>										
American . . . .	1,138	1,255	1,307	857	1,166	238	262	273	179	348
Other . . . . .	35	31	37	57	160	7	7	8	12	34
<b>TOTAL . . . .</b>	<b>1,173</b>	<b>1,286</b>	<b>1,344</b>	<b>914</b>	<b>1,826</b>	<b>245</b>	<b>269</b>	<b>281</b>	<b>191</b>	<b>382</b>
<b>Total Continent 2):</b>										
American . . . .	4,673	4,769	4,740	3,173	4,691	978	998	992	664	981
Argentine, Brazil- ian, etc. . . . .	20	13	16	27	100	4	3	3	5	21
E. Indian, Austral- ian, etc. . . . .	160	157	144	85	244	33	33	30	18	51
Egyptian . . . .	118	117	139	138	109	25	24	29	29	23
W. Indian, W. Afri- can, E. Afri- can, etc. . . . .	29	31	42	19	52	6	6	9	4	11
<b>TOTAL . . . .</b>	<b>5,000</b>	<b>5,087</b>	<b>5,081</b>	<b>3,442</b>	<b>5,196</b>	<b>1,046</b>	<b>1,064</b>	<b>1,163</b>	<b>720</b>	<b>1,087</b>

1) Includes: W. Indian, etc., E. African, etc.; W. African, and Australian. — 2) Includes Bremen, Le Havre, and other Continental ports  
Authority: Liverpool Cotton Ass.

# MONTHLY REVIEW OF PRICES

(All quotations are, unless otherwise, for spots)

PRODUCTS, MARKETS AND DESCRIPTION	19	12	5	28	21	AVERAGE 1)					Commercial Season	
	May	May	May	April	April	April	May	May			1931-32	1930-31
	1933	1933	1933	1933	1933	1933	1933	1931				
<b>WHEAT.</b>												
Budapest (a): Tisza region (78 kg. p. hl.; pengő p. quintal) . . . . .	...	...	...	...	...	...	12.62	15.03			12.28	15.34
Braila: Good quality (lei p. quintal) 2) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	346	357			305	351
Winnipeg: No. 1 Manitoba (cents p. 60 lbs.) . . . . .	62 3/4	65 1/4	65 1/4	55 1/4	54 1/4	53 1/4	63 1/4	60 1/4			59 1/4	64 1/4
Chicago: No. 2 Hard Winter (cents p. 60 lbs.) . . . . .	71 1/4	75 1/4	74 1/4	67	68	63 1/4	n. 56	83 1/4			54 1/4	78
Minneapolis: No. 1 Northern (cents p. 60 lbs.) . . . . .	72 1/4	75 1/4	75 1/4	67 1/4	68	64	65 1/4	80 1/4			66 1/4	77 1/4
New-York: No. 2 Hard Winter (cents p. 60 lbs.) . . . . .	82	86 1/4	85 1/4	76 1/4	76 1/4	72 1/4	70 1/4	n. q.			66 1/4	91 1/4
Buenos Aires (b): Barletta (80 kg. p. hectol.; pesos paper p. quintal) . . . . .	5.80	6.00	5.85	5.80	5.75	5.69	7.16	6.05			6.68	6.83
Karachi: Karachi white, 2 % barley, 1 1/4 % dirt (rupees p. 64 lbs.) . . . . .	26-0-0	24-4-0	24-8-0	24-2-0	24-4-0	26-12-6	21-7-6	18-8-0			21-15-9	19-15-2
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	19.90	19.80	19.80	19.70	19.60	19.62	27.35	28.51			23.63	26.00
Hamburg, c. i. f. (Reichsmarks p. quintal):												
No. 2 Manitoba . . . . .	8.98	9.23	8.91	8.75	9.00	8.76	10.37	12.02			10.38	12.65
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	11.07			9.32	13.00
Barusso 3) . . . . .	7.49	7.70	7.38	7.17	7.11	7.03	9.48	9.87			8.78	11.10
Antwerp (francs p. quintal):												
Home grown . . . . .	83.00	83.00	82.00	82.00	83.00	81.25	85.50	101.00			83.10	95.50
No. 2 Hard Winter, Gulf 4) . . . . .	83.00	82.00	80.00	81.00	78.00	77.75	84.75	99.50			81.75	112.50
Paris: Home-grown, 75-77 kg. (francs p. quintal). . . . .	95 15	98.25	99.00	98.85	102.50	99.91	175.25	185.60			167.10	175.00
London: Home grown (shillings p. 504 lbs.) . . . . .	26 1/3	25/-	24/-	23/-	23/-	22 10/16	26/6	25/6			26 1/5	27/1
London and Liverpool, c. i. f., parcels, shipping current month (shillings p. 480 lbs.):												
South Russian (on sample) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.			22/3	23/7
No. 3 Manitoba . . . . .	26/-	26 7/16	24 4/16	25/-	24 4/16	24 4/16	26 10/16	23/9			25/9	25/4
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	26 1/11			25/3	26/4
White Pacific . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	7) 29/7	24/8			26/5	26/7
Rosafe (añolet) 5) . . . . .	22 1/16	22/6	21 10/16	20 7/16	20/3	20 4/16	25/9	21/4			23/8	23/5
Choice White Karachi . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	28/2			27/-	27/-
Australian . . . . .	25/6	25/9	24/3	23/3	23/6	23 5/16	27/1	23/8			25/9	25/7
Milan (a): Home-grown, soft, "Buono mercantile" (76 78 kg. p. hl.; lire p. quintal) . . . . .	92.50	97.50	100.00	99.00	99.50	100.20	120.75	112.20			106.20	109.10
Genoa c. i. f.: Plate (shillings p. metric ton) 6) . . . . .	n. 1.90	n. 1.94	n. 1.94	n. q.	n. q.	n. q.	n. 2.30	107/4			n. 2.21	110/-
<b>RYE.</b>												
Budapest (a): Home-grown (pengő p. quintal) . . . . .	...	...	...	...	...	...	14.00	14.43			12.24	10.79
Berlin: Home-grown (Reichsmarks p. quintal) . . . . .	15.50	15.50	15.50	15.50	15.60	15.57	20.17	19.81			19.00	17.18
Hamburg, c. i. f. (Reichsmarks p. quintal):												
Russian (72-73 kg. p. hl.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.			n. 9.50	n. q.
La Plata (74-75 kg. p. hl.) . . . . .	8) 5.76	6.14	6.02	5.93	5.91	5.84	8.99	8.99			8.36	7.65
Minneapolis: No. 2 (cents p. 56 lbs.) . . . . .	53 1/2	53	50 1/4	42 1/4	45	43 1/4	39 1/4	36 1/2			42 1/2	42 1/2
Groningen (c): Home-grown (florins p. quintal) . . . . .	3.75	3.85	3.75	3.95	3.90	3.97	6.00	4.77			5.13	4.45
<b>BARLEY.</b>												
Braila: Average quality (lei p. quintal) 2) . . . . .	165	167	165	165	162	161	290	294			263	232
Winnipeg: No. 4 Western (cents p. 48 lbs.) . . . . .	34 1/4	34	32 1/4	30	30 1/4	29 1/4	37 1/4	29			34 1/4	26 1/4
Chicago: Feeding (cents p. 48 lbs.) . . . . .	48	53	48	40	48	38 1/4	43	38			43 1/4	43 1/4
Minneapolis: Feeding, "lower grades" (cents per 48 lbs.) . . . . .	31 1/4	33	33 1/4	34	32	29 1/4	35 1/4	33 1/4			38 1/4	37 1/4
Berlin: Home-grown fodder (Reichsmarks per quintal) . . . . .	17.20	17.20	17.05	16.85	16.70	16.74	18.17	23.49			16.41	19.52
Antwerp: Danubian (francs p. quintal) . . . . .	53.00	52.00	52.00	51/50	51.00	51.00	85.00	83 1/4			77.25	73.25
London: English malting (shillings p. 448 lbs.) . . . . .	30/-	30/-	30/-	30/-	30/-	30/-	n. q.	32/6			39/4	35/8
London and Liverpool, c. i. f., parcels (shillings per 400 lbs.):												
Danubian 3) . . . . .	15/3	15/6	15 1/16	14.9	14/6	14/6	n. q.	18/1			n. q.	15/2
Russian (Azoff-Black sea) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	7) 17/3			18/11	14/3
Canadian Western, N. 4) . . . . .	17 10/16	17 7/16	17/-	16/9	16/3	16 5/16	21/5	16/5			20/11	15/11
Californian malting (shillings p. 448 lbs.) . . . . .	24/6	24/6	n. q.	n. q.	23/-	22/8	n. 28/1	31/8			33/4	27/8
Groningen (c): Home grown winter (fl. p. quintal) . . . . .	3.67	3.85	3.85	3.95	3.97	4.00	6.40	5.47			5.87	4.97

n. q. = not quoted. — n. = nominal. — a) Saturday prices. — b) Thursday prices. — c) Prices of preceding Tuesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) Owing to the freezing of the Danube the Braila exchange was closed from 20 January to 17 March. For this period quotations for Costanza are given. — 3) August-Dec. 1930: 76 kg. p. hl.; Jan. 1931 - Jan. 1932: 79 kg.; Feb-Dec. 1932: 80 kg.; afterwards: 79 kg. — 4) From July 1931: No. 1 Hard Winter, Gulf. — 5) August-Nov. 1930: 62 1/4 lbs. per bushel; Dec. 1930 - Feb. 1931: 63 1/4 lbs.; March - Nov. 1931: 63 lbs.; Dec. 1931: 63 1/4 lbs.; Jan.-Feb. 1932: 64 lbs.; afterwards 63 1/4 lbs. — 6) From April 1932: dollars p. quintal. — 7) Shipping August-Sept. — 8) 72-73 kg. p. hl.



PRODUCTS, MARKETS AND DESCRIPTION	19	12	5	28	21	AVERAGE 1)				Commercial Season	
	May	May	May	April	April	April	May	May			
	1933	1933	1933	1933	1933	1933	1932	1931		1931-32	1930-31
<b>OATS.</b>											
Braila: Good quality (1st p. quintal) 2) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	316	331		285	247
Winnipeg: No. 2 White (cents per 34 lbs.) . . . . .	28 1/4	29 1/4	29 1/4	25 1/4	25 1/4	24 1/4	33 1/4	29		31 1/4	30
Chicago: No. 2 White (cents per 34 lbs.) . . . . .	25 1/4	27 1/4	26 1/4	24 1/4	25 1/4	23 1/4	24 1/4	28 1/4		24 1/4	32 1/4
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	4.10	4.10	4.05	4.00	4.00	4.00	5.60	3.96		5.33	3.58
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	13.80	13.45	13.05	12.85	12.65	12.60	16.52	19.48		15.10	16.17
Paris: Home grown, black and other (francs p. quintal) . . . . .	64.75	67.35	67.50	67.00	71.75	69.34	114.35	90.80		101.75	81.00
London: Home grown white (shillings p. 336 lbs.) . . . . .	18/-	18/-	18/-	18/-	18/-	18/-	23/8	20/6		21/3	18/4
London and Liverpool c. i. l., parcels (shillings p. 320 lbs.) . . . . .											
Danubian (39-40 lbs.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.		n. q.	n. 12/1
Plate (f. a. q.) . . . . .	11/9	12 1/16	12/-	11/6	11 1/16	11/4	15/1	11 1/4		14/5	10/9
Chilian Tawny . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	12/2		n. 16/-	12/-
Milan (b): spot (lire p. quintal):											
Home grown . . . . .	53.50	56.50	58.50	58.50	58.50	60.10	77.00	72.90		73.60	74.00
Foreign imported . . . . .	49.00	51.00	51.00	51.00	51.00	51.20	66.00	62.50		65.20	60.40
<b>MAIZE.</b>											
Braila: Danubian (1st p. quintal) 2) . . . . .	150	154	150	158	150	151	200	257		187	210
Chicago: No. 2 Mixed American (cents p. 56 lbs.) . . . . .	43	46 1/4	41	34 1/4	36 1/4	34 1/4	32 1/4	55 1/4		34	58 1/4
Buenos Aires (a): Yellow Plate (pesos paper p. quintal) . . . . .	3.95	4.10	3.87 1/2	3.90	3.87 1/2	3.93 1/2	4.55	3.88		4.63	3.82
Antwerp, spot (francs p. quintal):											
Bessarabian . . . . .	48.00	48.00	49.50	48.50	49.00	48.62	n. q.	84.50		n. q.	71.25
Argentine Cinquintino . . . . .	74.00	73.00	70.00	69.00	71.00	70.50	63.10	88.00		63.30	81.00
Yellow Plate . . . . .	54.00	54.50	54.00	57.00	54.50	55.00	57.75	77.75		57.20	65.00
London and Liverpool, parcels, c. i. f. (shillings p. 480 lbs.):											
Danubian . . . . .	16 1/4	16/9	n. q.	16 1/16	n. 16/-	16/-	n. q.	n. q.		n. 19/3	n. 17/4
Yellow Plate . . . . .	16 7/8	17 1/16	16/9	16/3	16/3	16/5	18/1	15/9		18/2	15/6
No. 2 White African . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 19/10		n. 20/11	n. 18/1
Milan (b): Home grown (lire p. quintal) . . . . .	51.00	51.00	51.00	47.50	46.00	46.50	77.50	53.90		68.70	51.90
<b>RICE (CLEANED).</b>											
										1932	1931
Milan (b): Maratelli (lire p. quintal) . . . . .	141.00	141.00	138.00	137.00	136.00	136.20	158.50	128.20		151.25	117.35
Rangoon: No. 2 Burma (rupees p. 7500 lbs.) . . . . .	200	195	197 1/4	192 1/4	187 1/4	187 1/4	290 1/4	216		268 1/4	249 1/4
Saigon (Indo-chinese piastres p. quintal):											
No. 1 Round white (25 % broken) . . . . .	...	...	...	...	...	*) ...	6.07	5.90		5.48	6.73
No. 2 Japan (40 % broken) . . . . .	...	...	...	...	...	*) ...	5.53	5.37		5.11	6.20
London (a): c. i. f. (shillings p. 112 lbs.):											
Spanish Belloch, No. 3 oiled . . . . .	12/-	12/-	12.3	12/3	12/3	12/3	13/6	12/2		13/8	11/11
Italian good, No. 6 oiled . . . . .	8 7/8	9/3	9/3	8 4/8	8/6	8/9	14/6	15/5		14/-	13/7
American Blue Rose . . . . .	17/6	17/3	17/3	16/6	15/6	15/11	16/1	18 1/2		17 1/2	18/7
Burma, No. 2 . . . . .	6 1/4	6/6	6 1/4	6 1/4	6/3	6/3	8/11	7/-		8/4	7/11
Saigon, No. 1 3/4 . . . . .	6/6	6 7/8	6 7/8	6/6	6/3	6/4	8/9	7/-		8/5	8/1
Siam, Garden No. 1 3/4 . . . . .	8/3	8 1/8	8/3	8/3	8/-	7 11/16	9/5	8/6		9 1/4	9/5
Tokio: Chumai (brown Japanese, average quality; yens p. koku) . . . . .	21.80	21.80	21.50	21.40	21.30	21.40	22.15	18.22		21.20	18.46
<b>LINSEED.</b>											
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	10.20	10.32 1/4	9.85	9.55	9.10	9.20	8.75	10.61		9.22	10.82
Antwerp: Plate (francs p. quintal) . . . . .	110.00	107.00	102.00	101.50	98.00	98.00	97.35	147/75		103.25	146.00
London, c. i. f. (f. p. long ton):											
La Plata (delivery Hull) . . . . .	9-6-3	9-6-3	9-1-3	8-15-0	8-5-0	8-6-10 1/4	7-14-1	8-8-6		8-8-4	8-14-1
Bombay bold . . . . .	11-3-9	11-2-6	10-15-0	10-7-6	9-18-9	9-18-1 1/4	10-17-10	11-6-0		11-10-0	11-9-6
Duluth: No. 1 Northern (cents p. 56 lbs.) . . . . .	*) 143 1/2	*) 144	*) 142 1/2	129 1/4	127 1/4	122 1/4	122 1/4	152 1/4		118 1/4	148

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) See same note on preceding page. — 3) From January 1932; Siam, Special. — 4) 14 April: 3.82; 7 April: 3.82; 31 March: 3.86; 24 March: 4.02; March average: 4.10. — 5) 14 April: 3.66; 7 April: 3.66; 31 March: 3.69; 24 March: 3.86; March average: 3.92. — 6) July delivery.

PRODUCTS, MARKETS AND DESCRIPTION	19	12	5	28	21	AVERAGE 1)				Commercial Season	
	May	May	May	April	April	April	May	May			
	1933	1933	1933	1933	1933	1933	1933	1933		1931-32	1930-31
<b>COTTONSEED.</b>											
Alexandria: Sakellariadis (plastres per ardeb)	62.5	63.2	64.8	66.0	64.5	65.0	52.4	49.6		60.0	52.2
London: Sakellariadis (delivery Hull: £ p. l. ton)	6-12-6	6-11-3	6-12-6	6-13-9	6-11-3	6-10-11 <sup>1</sup> / <sub>4</sub>	5-7-10	5-6-3		6-3-7	5-12-6
<b>COTTON.</b>											
New Orleans: Middling (cents per lb.)	8.46	8.91	8.36	7.34	7.28	6.91	5.74	9.12		6.20	10.07
New York: Middling (cents per lb.)	8.50	8.95	8.55	7.50	7.50	7.06	5.76	9.40		6.35	10.38
Bombay: M. g. Broach f. g. (rupees per 784 lbs.)	196	204	193	180	177	177 <sup>1</sup> / <sub>4</sub>	168 <sup>1</sup> / <sub>4</sub>	177 <sup>1</sup> / <sub>4</sub>		181 <sup>1</sup> / <sub>4</sub>	191 <sup>1</sup> / <sub>4</sub>
Alexandria (alaris per kantar):											
Sakellariadis f. g. f.	14.75	14.70	14.10	13.45	13.35	13.34	10.66	14.95		12.17	17.12
Ashmuni-Zagora f. g. f.	12.92	13.17	12.57	11.82	11.52	11.53	9.15	10.84		9.73	12.00
Bremen: Middling (U. S. cents per lb.)	9.94	10.26	9.46	8.65	8.57	8.16	6.79	10.51		7.44	11.59
M. g. Broach fully good (pence per lb.)	n. 4.75	n. 4.85	n. 4.55	n. 4.35	n. 4.35	n. 4.31	n. 4.17	n. 4.33		n. 4.48	n. 4.63
Le Havre: Middling, Gulf (frances per 50 kg.)	252.00	261.00	245.00	237.00	235.00	236.25	202.00	323.00		216.00	349.00
Liverpool (pence per lb.):											
Middling fair.	n. 7.16	n. 7.39	n. 7.09	n. 6.73	n. 6.50	n. 6.57	n. 5.52	n. 6.41		n. 5.85	n. 6.93
Middling.	5.96	6.19	5.89	5.53	5.30	5.37	4.52	5.21		4.79	5.72
São Paulo, good fair.	n. 6.26	n. 6.44	n. 6.14	n. 5.78	n. 5.55	n. 5.62	n. 4.77	5.42		n. 4.98	5.91
M. g. Broach, fully good.	n. 5.11	n. 5.35	n. 5.08	n. 4.68	n. 4.52	n. 4.57	n. 4.06	4.03		n. 4.34	n. 4.25
Sakellariadis, fully good fair.	8.10	8.19	7.84	7.45	7.39	7.40	6.09	8.18		6.76	9.08
<b>BUTTER.</b>											
Copenhagen (a) Danish (Cr. p. quintal).	150.00	154.00	154.00	154.00	154.00	149.00	149.50	192.00		178.70	209.00
Leeuwarden, Commission for the Dutch butter											
quotations: (florins per kg.)	0.53	0.53	0.53	0.55	0.55	0.54	0.83	1.26		0.94	1.34
Maasricht, auction (b): Dutch (florins p. kg.)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	0.93	1.30		1.27	1.38
Hamburg, auction (c): Schleswig-Holstein butter,											
with quality mark (R. M. per 50 kg.)	119.33	103.15	95.71	96.07	92.97	91.86	116.81	124.36		115.83	131.22
Kempten (c): Allgäu butter (Pfennige p. half kg.)	118	102	94	90	86	85 <sup>1</sup> / <sub>2</sub>	114	109 <sup>1</sup> / <sub>2</sub>		107	110
London (d) (shillings p. cwt.):											
British blended	116.8	112/-	112/-	112/-	112/-	112/-	130/8	140/-		131/6	140/4
Danish.	100/-	100/-	100/-	96/-	94/-	95/6	113.3	121/6		123/1	133/4
Irish creamery, salted	n. q.	78/-	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.		n. q.	119/5
Dutch	102/-	102/-	n. q.	n. q.	n. q.	n. q.	n. q.	120/-		115/10	132/1
Argentine	72/-	74/-	72/-	71/-	74/-	73/3	106.6	114/3		103/10	117/7
Siberian	77/-	68/-	66/-	66/-	n. q.	66/-	n. q.	n. q.		n. q.	93/6
Australian, salted	84/-	78/-	76/-	72/-	73/-	72/6	103/6	n. q.		105/8	116/8
New Zealand, salted	87/-	80/-	78/-	74/-	77/-	75/-	104/6	114/3		110/-	119/11
<b>CHEESE.</b>											
Milan (lire per quintal):											
Parmigiano-Reggiano, 1st quality of last year's											
production	1,050.00	1,050.00	1,050.00	1,050.00	1,050.00	1,050.00	1,065.00	1,112.00		1,016.00	1,103.00
Green Gorgonzola, mature, choice	475.00	475.00	480.00	480.00	480.00	488.75	448.75	630.00		512.70	616.00
Rome: Roman pecorino, choice (lire p. quintal)	1,075.00	1,100.00	1,125.00	1,125.00	1,125.00	1,125.00	1,321.00	1,130.00		1,251.00	1,121.00
Alkmaar: Edam 40 + (40 % butterfat, with											
the country's cheesemark, factory cheese, small;	26.00	24.00	22.00	21.00	20.00	20.25	20.25	32.70		24.41	32.63
florins p. 50 kg.)											
Gouda: Gouda 45 + (whole milk cheese, with											
the country's cheesemark, home made; florins	27.50	27.50	25.00	23.50	24.25	24.44	18.75	36.20		26.92	37.93
p. 50 kg.)											
Kempten (c): (Pfennige per half kg.)											
Soft cheese, green (20 % butterfat)	18	18	18	18	18	18	20 <sup>1</sup> / <sub>2</sub>	21		21	24
Emmenthal from the Allgäu (whole milk											
cheese); 1st quality	74 <sup>1</sup> / <sub>2</sub>	74 <sup>1</sup> / <sub>2</sub>	74 <sup>1</sup> / <sub>2</sub>	74 <sup>1</sup> / <sub>2</sub>	74 <sup>1</sup> / <sub>2</sub>	74 <sup>1</sup> / <sub>2</sub>	83	98 <sup>1</sup> / <sub>2</sub>		81 <sup>1</sup> / <sub>2</sub>	97 <sup>1</sup> / <sub>2</sub>
London (d) (shillings per cwt.):											
English Cheddar	98/-	96/-	96/-	100/-	100/-	100/-	120/6	106/-		109/-	99/10
Canadian	74/-	73/-	71/6	71/6	71/6	70/10 <sup>1</sup> / <sub>2</sub>	78/9	79/-		72/9	75/9
New Zealand	55/6	49/6	47/-	45/-	46/6	46/4 <sup>1</sup> / <sub>2</sub>	62/-	53/10		63/2	63/2
Liverpool (d): Engl. Cheshire, ungraded (sh p. cwt.)	65/4	65/4	60/-	60/-	60/-	60/3	96/3	75/10		103/10 <sup>1</sup> / <sub>2</sub>	94/3

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Prices of preceding Tuesday. — c) Wednesday prices. — d) Average prices for weeks ending on preceding Wednesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) The method of quotation has been changed as from January 1932; actual prices are generally 3 Pf. higher than according to the former system. — 3) September 1932-Jan. 1933: Russian. — 4) Provisionary average.

## THE TREND OF PRICES OF AGRICULTURAL PRODUCTS

In the following pages the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

But in addition to the original data summary table are given below.

### *Percentage variations in the index-numbers for April, 1933.*

COUNTRIES	compared with those for March, 1933		compared with those for April, 1932	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general
Germany . . . . .	— 0.8	— 0.4	— 13.6	— 7.8
England and Wales . . . . .	+ 2.9	+ 2.0	— 10.3	— 4.7
Argentina . . . . .	+ 0.4	—	— 12.6	—
Canada . . . . .	+ 4.7	+ 1.6	— 8.4	— 4.4
Estonia . . . . .	—	—	—	—
United States . . . . .	{ a) ... b) ...	—	...	—
Finland . . . . .	— 1.4	— 1.1	— 2.7	— 1.1
Hungary . . . . .	— 4.2	— 2.4	— 24.4	— 17.5
Italy . . . . .	— 4.9	— 1.7	— 23.7	— 11.5
New Zealand . . . . .	— 0.6	—	— 11.4	—
Netherlands . . . . .	— 0.0	—	— 9.8	—
Poland . . . . .	— 0.4	— 0.5	— 14.4	— 11.8
Yugoslavia . . . . .	{ c) + 0.6 d) — 3.1	{ — 2.2	{ c) — 16.4 d) + 4.9	{ + 0.3

a) Bureau of Agricultural Economics — b) Bureau of Labor. — c) Vegetable products — d) Animal products.

# INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER \*

COUNTRIES AND CLASSIFICATIONS	April	March	Feb.	Jan.	Dec	Nov.	April	April	Year	
	1933	1933	1933	1933	1932	1932	1932	1931	1932 1)	1931
GERMANY										
(Statistisches Reichsamt)										
1913 = 100.										
Foodstuffs of vegetable origin . . . . .	97.8	99.0	97.0	95.7	96.6	99.1	122.4	129.7	112.0	119.3
Livestock . . . . .	59.9	61.3	60.5	57.9	60.6	63.5	64.2	93.3	65.5	83.0
Livestock products . . . . .	85.3	84.6	88.0	87.5	96.9	103.4	90.3	105.7	93.9	108.4
Feeding stuffs . . . . .	83.4	83.8	81.8	81.9	83.2	84.4	99.7	113.9	91.6	101.9
Total agricultural products . . . . .	81.8	82.5	82.2	80.9	84.4	87.8	94.7	108.3	91.3	103.8
Fertilizers 2) . . . . .	71.9	72.7	73.4	72.6	70.2	69.8	71.7	80.1	—	76.5
Agricultural dead stock . . . . .	111.1	111.2	111.5	112.5	113.1	113.6	117.0	131.2	116.1	130.7
Finished manufactures (* Gebrauchs- güter *) . . . . .	109.2	109.5	110.5	111.4	112.0	112.5	119.9	142.4	117.5	140.1
Wholesale products in general . . . . .	90.7	91.1	91.2	91.0	92.4	93.9	98.4	113.7	96.5	110.9
ENGLAND AND WALES										
(Ministry of Agriculture and Fisheries)										
Average of corresponding months										
1911-13 = 100.										
Agricultural products . . . . .	105	102	106	107	103	101	117	123	109	120
Feeding stuffs . . . . .	86	90	91	92	90	90	99	88	95	83
Fertilizers . . . . .	90	90	90	90	89	88	91	100	90	96
Wholesale products in general 3) . . . . .	92.4	90.6	90.6	91.5	91.4	91.6	97.0	99.3	94.9	97.7
ARGENTINA										
(Banco de la Nación Argentina)										
1926 = 100.										
Cereals and linseed . . . . .	51.7	51.7	52.6	53.8	52.2	55.5	61.3	51.2	59.5	55.8
Meat . . . . .	63.7	64.0	57.1	55.2	56.8	60.9	73.8	93.1	69.8	94.3
Hides and skins . . . . .	53.2	49.9	49.1	54.5	51.4	54.7	17.8	70.5	53.1	64.5
Wool . . . . .	41.9	40.8	40.8	42.1	36.8	40.7	46.1	57.7	44.2	61.2
Dairy products . . . . .	49.4	51.8	52.3	53.9	53.3	53.7	58.7	73.6	56.9	74.5
Forest products . . . . .	71.8	71.8	71.8	70.9	68.5	64.9	66.3	108.7	68.4	99.3
Total agricultural products . . . . .	52.8	52.6	52.4	53.5	51.9	55.1	60.4	61.5	59.1	63.8
CANADA										
(Internal Trade Branch										
of the Dominion Bureau of Statistics)										
1926 = 100.										
Field products (grain, etc.) . . . . .	41.1	38.0	36.0	35.1	33.6	36.6	44.5	46.1	40.7	43.6
Animals and animal products . . . . .	56.4	56.0	54.7	57.9	57.8	56.9	62.1	81.8	60.9	77.6
Total Canadian farm products . . . . .	46.8	44.7	43.0	43.6	42.7	44.2	51.1	59.5	48.3	56.3
Fertilizers . . . . .	71.7	72.9	72.9	72.3	72.3	72.3	71.4	86.3	71.9	82.6
Consumer's goods (other than foodstuffs, etc) . . . . .	74.8	76.0	76.1	76.7	77.0	78.3	78.3	79.8	78.8	80.0
Wholesale products in general . . . . .	65.4	64.4	63.6	63.9	64.0	64.8	68.4	73.9	67.0	72.1
ESTONIA										
(Central Bureau of Statistics)										
1913 = 100.										
Commodities imported 4) . . . . .	...	...	...	...	111	112	114	133	113	129
Commodities exported . . . . .	54	58	58	58	59	63	62	78	58	76
Agricultural products imported and export- ed 4) . . . . .	...	...	...	...	74	77	77	94	74	91

\* For an explanation of the method of calculation of the index-numbers, reference should be made to the Institute's publication "Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer" (Rome, 1930), as well as to pages 77 to 79 of the "Crop Report" of January 1932 and to page 517 of the "Crop Report" of July 1932.

1) Most data for 1932 are provisional. — 2) From July 1932, new series. — 3) Calculated by the "Statist", reduced to base-year 1913 = 100. — 4) From January 1932 the price of rye is excluded from the calculations.

COUNTRIES AND CLASSIFICATIONS	April	March	Feb.	Jan	Dec.	Nov.	April	April	Year	
	1933	1933	1933	1933	1932	1932	1932	1931	1932	1931
									1)	
<b>UNITED STATES</b>										
(Bureau of Agricultural Economics)										
Average 1909-10 to 1913-14 = 100.										
Cereals . . . . .	...	36	34	34	33	34	50	74	44	63
Fruits and vegetables . . . . .	...	60	57	59	59	57	78	120	71	98
Meat animals . . . . .	...	56	53	51	52	57	66	106	63	93
Dairy products . . . . .	...	59	62	68	69	68	74	99	70	94
Poultry and eggs . . . . .	...	54	57	96	121	115	60	90	80	96
Cotton and cottonseed . . . . .	...	48	44	45	43	47	46	78	46	63
Total agricultural products . . . . .	...	50	49	51	52	54	59	91	57	80
Commodities purchased by farmers 2) . . . . .	...	103	104	105	106	106	114	134	111	129
Agricultural wages 2) . . . . .	...	—	—	74	—	—	94	127	90	116
<b>UNITED STATES</b>										
(Bureau of Labor)										
1926 = 100.										
Grains . . . . .	...	36.0	32.7	32.9	31.7	33.2	44.5	59.5	39.4	53.0
Livestock and poultry . . . . .	...	43.0	40.1	37.8	38.7	41.9	49.2	70.3	48.3	63.9
Other farm products . . . . .	...	45.3	44.2	48.7	51.3	53.9	51.2	73.4	51.4	69.2
Total agricultural products . . . . .	...	42.8	40.9	42.6	44.1	46.7	49.2	70.1	48.2	64.8
Agricultural implements . . . . .	...	83.1	83.1	84.5	84.5	84.6	85.0	94.7	84.9	94.0
Fertilizer materials . . . . .	...	61.9	61.5	62.3	63.1	63.5	70.1	80.6	66.9	76.8
Mixed fertilizers . . . . .	...	60.1	62.4	62.7	65.6	65.6	71.1	83.5	69.4	82.0
Cattle feed . . . . .	...	47.3	40.6	38.2	37.1	40.8	53.4	81.2	45.9	62.7
Non-agricultural commodities . . . . .	...	63.8	63.7	64.9	66.5	67.5	68.9	74.3	68.4	73.0
Wholesale products in general . . . . .	...	60.2	59.8	61.0	62.6	63.9	65.5	73.3	64.9	71.1
<b>FINLAND</b>										
(Central Bureau of Statistics)										
1926 = 100.										
Cereals . . . . .	90	90	91	89	89	90	89	76	90	77
Potatoes . . . . .	93	93	91	78	71	69	69	69	71	68
Fodder . . . . .	65	67	71	69	66	67	70	71	69	63
Meat . . . . .	68	66	66	63	57	54	61	66	61	64
Dairy products . . . . .	67	67	69	73	77	80	74	73	76	76
Total agricultural products . . . . .	71	72	74	73	72	74	73	73	74	72
Wholesale products in general . . . . .	88	89	89	90	90	91	89	85	90	84
<b>HUNGARY</b>										
(Central Bureau of Statistics)										
1913 = 100.										
Agricultural and livestock products . . . . .	68	71	72	71	68	69	90	84	—	—
Wholesale products in general . . . . .	80	82	83	82	81	82	97	93	—	—
<b>ITALY</b>										
(Consiglio Provinciale dell'Economia										
Corporativa di Milano)										
1913 = 100.										
National agricultural products . . . . .	275.55	289.77	305.65	314.67	322.97	327.61	361.18	356.36	339.63	343.11
Wholesale products in general . . . . .	282.18	287.23	292.64	296.49	298.95	301.89	318.79	353.10	309.91	341.57
<b>NEW ZEALAND</b>										
(Census and Statistics Office)										
Average 1909-13 = 100.										
Dairy produce . . . . .	76.4	86.7	83.3	82.7	83.9	94.5	100.3	89.2	93.8	98.9
Meat . . . . .	110.5	111.8	119.2	123.0	108.7	100.3	113.7	128.1	109.1	130.1
Wool . . . . .	64.7	63.0	64.3	61.1	52.7	60.0	61.0	76.4	61.3	67.9
Other pastoral produce . . . . .	55.6	57.6	58.9	59.8	61.7	62.0	69.6	69.6	62.2	76.7
All pastoral and dairy produce . . . . .	79.9	80.5	85.1	85.0	79.9	84.2	90.7	93.9	86.4	96.5
Field products . . . . .	114.9	115.0	107.0	116.4	96.8	95.6	113.5	117.8	101.7	115.5
Total agricultural products . . . . .	80.9	81.4	85.7	85.8	80.4	84.5	91.3	94.4	86.8	97.0

1) Most data for 1932 are provisional. — 2) 1910-14 = 100.

COUNTRIES AND CLASSIFICATIONS	April	March	Feb.	Jan.	Dec.	Nov.	April	April	Year	
	1933	1933	1933	1933	1932	1932	1932	1931	1932	1931
<b>NORWAY 1)</b>										
(Kgl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals . . . . .	119	119	119	119	116	116	123	105	120	125
Potatoes . . . . .	80	82	81	79	75	72	151	167	101	130
Pork . . . . .	80	86	90	99	98	95	85	74	91	96
Other meat . . . . .	115	113	107	106	106	101	113	162	109	218
Eggs . . . . .	65	76	103	93	111	142	70	85	93	108
Dairy products . . . . .	119	119	118	118	128	131	119	133	124	156
Concentrated feeding stuffs . . . . .	99	100	101	103	103	104	104	111	104	121
Maize . . . . .	85	87	90	89	87	91	87	85	90	108
Fertilizers . . . . .	92	92	92	91	89	87	89	96	89	105
<b>NETHERLANDS</b>										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Vegetable products . . . . .	35	40	41	40	41	43	56	78	2) 58	2) 72
Animal products . . . . .	50	48	50	50	50	55	49	74	2) 57	2) 77
Total agricultural products . . . . .	46	46	47	48	48	51	51	75	2) 57	2) 76
Agricultural wages . . . . .	83	83	83	83	83	83	95	95	2) 93	2) 99
Wholesale products in general 3) . . . .	..	48.7	50.1	50.7	51.4	52.1	54.1	69.0	77.8	65.7
<b>POLAND 4)</b>										
(Central Bureau of Statistics)										
1917 = 100.										
Vegetable products . . . . .	50.4	49.8	49.6	46.2	38.8	40.8	61.7	64.7	49.8	53.9
Worked-up plant products . . . . .	63.5	61.7	61.8	54.1	51.1	52.7	71.5	75.4	61.3	65.9
Total products of plant origin . . . . .	56.9	55.8	55.6	48.0	44.8	46.7	66.8	70.3	55.6	60.0
Animals . . . . .	44.6	43.5	40.1	37.3	37.6	39.2	49.7	55.9	43.1	55.8
Dairy products . . . . .	40.5	45.8	47.2	52.8	55.4	67.1	51.4	61.6	55.4	68.0
Total products of animal origin . . . .	43.0	44.8	43.4	43.8	44.9	50.1	50.8	58.5	48.2	60.8
Total agricultural products . . . . .	50.5	50.7	50.0	46.2	44.8	48.1	59.0	64.5	52.0	59.7
Fertilizers . . . . .	112.9	112.9	112.9	110.8	107.6	107.6	94.1	124.7	105.5	120.2
Industrial products . . . . .	63.1	63.3	64.1	64.7	65.8	67.1	70.0	82.1	69.6	79.4
Wholesale products in general . . . . .	57.6	57.9	57.9	56.4	56.2	58.5	65.3	74.1	61.6	70.5
<b>YUGOSLAVIA</b>										
(National Bank of the Kingdom of Yugoslavia)										
1926 = 100.										
Vegetable products . . . . .	62.1	61.7	65.5	65.4	61.6	59.7	74.3	77.6	67.5	96.7
Animal products . . . . .	56.2	58.0	60.1	57.2	57.3	60.2	53.6	75.4	56.6	97.7
Industrial products . . . . .	72.7	73.6	73.0	73.0	68.1	67.6	66.2	73.9	66.2	80.2
Wholesale products in general . . . . .	60.3	67.8	68.4	67.6	64.8	64.7	66.1	75.5	65.2	88.8

1) The agricultural years refer to the period April 1-March 31. — 2) Agricultural year July 1-June 30. — 3) Calculated by the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100. — 4) Average data for the year 1932 are provisional.

## RATES OF FREIGHT

(Rates for entire cargoes)

VOYAGES	19	12	5	28	21	AVERAGE					
	May	May	May	April	April	April	May	May	Commercial		
	1933	1933	1933	1933	1933	1933	1932	1931	Season		
SHIPMENTS OF WHEAT AND MAIZE.											
Danube to Antwerp/Hamburg . . . (shill. per long ton)	12/9	13/-	n 13/3	n 13/6	13/9	13/10	13/9	13/6	14/6	13/11	
Black Sea to Antwerp/Hamburg . . . (shill. per long ton)	9/6	9/9	n. q.	n. 9/3	9/3	9/7 1/2	n. 10/6	10/4	10/10	10/10	
St. John to Liverpool 1) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	1/7	1/6	
Port Churchill to United Kingdom . . . (shill. per long ton)	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	—	—	
Montreal to United Kingdom . . . . .	1/7 1/2	1/6	1/9	1/9	1/9	1/9	1/9	2/2	0.08	1/10	
Gulf to United Kingdom . . . . .	2/-	2/-	2/-	2/-	2/-	2/-	2/3	2/2	2/6	2/3	
New York to Liverpool 1) . . . . .	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/8	1/6	
Northern Range to U. K./Continent . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	2/-	1/9	1/9	
North Pacific to United Kingdom (sh. per long ton)	18/6	18/6	18/6	18/6	18/6	18/6	n. 21/-	23/6	n. 22/2	22/3	
Vancouver to Yokohama 1) (gold \$ per sh. ton)	1.85	1.85	1.85	1.75	1.75	1.85	1.85	2.20	2.79	2.30	
La Plata Down River 2) to U. K./Continent . . . . .	14/3	14/3	14/-	13/6	13/-	13/11 1/2	15/2	18/3	16/-	16/4	
La Plata Up River 3) to U. K./Continent . . . . .	16/3	16/3	16/-	15/6	14/9	14/10	16/11	19/9	17/6	18/-	
Karachi to U. K./Continent 4) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 21/6	19/6	n. q.	19/3	
Western Australia to U. K./Continent . . . . .	22/-	21/6	21/3	21/9	22/3	22/3	24/-	28/8	26/-	29/8	
SHIPMENTS OF RICE.											
Saigon to Europe . . . . .	21/9	21/3	n. q.	n 21/-	n. 21/6	n. 20/6	22/-	25/7	23/5	24/3	
Burma to U. K./Continent . . . . .	n. 21/3	n. 21/3	n. 22/6	22/6	22/6	22/6	n. 23/9	23/11	n. 23/3	23/9	
										1932	1931

n. q. = not quoted. — n. = nominal. — 1) Rates for parcels by liners. — 2) "Down River" includes the ports of Buenos Aires and La Plata. — 3) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine Santa-Fé and Paraná) are subject to an extra rate of freight. — 4) The original date being quoted in "scale terms", 10 % is added to arrive at rates per long ton. — 5) Freight in gold \$ per 100 lbs. (in the case of a loss of 30 % in the value of the shilling, 10 % c. per 100 lbs. are equal to 2/10 per quarter).

## EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT OF THEIR PARITY WITH THE DOLLAR

COUNTRY	Exchange	Exchange rates					Percentage bonus (+) or loss (-) (1)							
		19 May 1933	12 May 1933	5 May 1933	28 April 1933	21 April 1933	19 May 1933	12 May 1933	5 May 1933	28 April 1933	21 April 1933			
Germany a)	Berlin	81.15	81.30	81.55	81.45	82.20	—	0.2	—	0.4	—	0.6	—	1.5
Argentina b) 4)	New York	131.70	131.80	131.30	134.80	140.90	—	40.1	—	40.1	—	40.3	—	36.0
Belgium b)	Zürich	14.42	14.42	14.44	14.46	14.43	+	0.1	+	0.1	+	0.2	+	0.4
Canada b) 4)	London	392.90	387.60	384.20	404.80	416.10	—	24.2	—	25.2	—	25.9	—	19.7
Denmark a)	Copenhagen	128.65	129.05	130.60	128.20	124.50	—	44.0	—	44.2	—	44.9	—	42.2
Egypt	London 2)	87.60	87.40	86.35	87.75	91.22	—	30.5	—	30.7	—	31.5	—	27.7
Great Britain b)	New-York	22.07	22.75	23.10	21.48	20.55	—	12.6	—	15.2	—	16.5	—	10.2
United States a)							+	0.4	+	0.4	+	0.4	+	0.4
France a)	Paris 3)	490.75	490.50	490.50	491.00	490.50	+	0.4	+	0.4	+	0.4	+	0.4
Indo-China							—	0.7	—	0.7	—	0.7	—	0.7
Hungary b)	Zürich	90.02	90.02	90.02	90.02	90.02	—	0.7	—	0.7	—	0.7	—	0.7
India b) 4)	London	132.10	131.80	130.20	132.10	137.30	—	30.2	—	30.3	—	31.2	—	27.4
Italy a)	Milan	370.50	368.00	371.75	372.00	376.00	—	1.1	—	0.4	—	1.4	—	1.5
Japan b)	Zürich	108.00	107.00	107.00	110.00	109.00	—	58.2	—	58.6	—	58.6	—	57.4
Netherlands a)	Amsterdam	48.05	48.04	48.05	48.05	48.10	—	0.1	—	0.1	—	0.1	—	0.1
Poland a)	Warsaw	172.40	172.25	172.37	172.30	172.40	—	0.2	—	0.2	—	0.2	—	0.2
Rumania b)	Zürich	3.08	3.08	3.08	3.08	3.08	—	0.6	—	0.6	—	0.6	—	0.6
Sweden a)	Stockholm	112.00	112.50	112.50	111.00	106.00	—	35.7	—	36.0	—	36.0	—	35.1
Czechoslovakia a)	Prague	649.00	648.50	649.25	649.75	648.75	+	0.3	+	0.4	+	0.3	+	0.4

a) Value of 100 Swiss francs expressed in national currency. — b) Value of 100 units of the national currency expressed in Swiss francs. — 1) The percentage represents as far as possible the premium or the loss on the national exchange. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piastre and the French franc changed only slightly the exchange rate of the latter only is given. — 4) These rates have been obtained by converting the original quotations on the bourses indicated into Swiss francs.

Prof. ALESSANDRO BRIZI, Segretario generale dell'Istituto, Direttore responsabile.

V-1933.

# MONTHLY CROP REPORT AND AGRICULTURAL STATISTICS

*The following explanations refer to crop conditions quoted in the crop notes and in the tables. — Crop condition according to the system of the country: Germany, Austria, Hungary, Luxemburg and Czechoslovakia: 1 = excellent, 2 = good, 3 = average, 4 = bad, 5 = very bad; France: 100 = excellent, 70 = good, 60 = fairly good, 50 = average, 30 = bad; Lithuania, Poland, Sweden and Switzerland: 5 = excellent, 4 = good, 3 = average, 2 = bad, 1 = very bad; Netherlands: 90 = excellent, 70 = good, 60 = fairly good, 50 = below average; U. S. S. R.: 5 = good, 4 = above the average, 3 = average, 2 = below average, 1 = bad; Canada: 100 = crop condition promising a yield equivalent to the average yield of a long series of years; United States: 100 = crop condition which promises a normal yield. — For other countries the system of the Institute is employed: 100 = crop condition which promises a yield equal to the average of the last ten years.*

## CEREALS

At the present time, when the commercial season is approaching its end, it seems opportune to summarize its essential characteristics, which will enable us, moreover, to determine the situation at the beginning of the new commercial season 1933-34.

According to the statistical documentation on wheat and other cereals that the Institute has presented to the Economic and Monetary Conference of London the world production (1) of wheat in 1932 as compared with previous years was as follows in millions of bushels :

1932 . . . . .	3,675	1927 . . . . .	3,611
1931 . . . . .	3,673	1926 . . . . .	3,396
1930 . . . . .	3,716	1925 . . . . .	3,338
1929 . . . . .	3,453	1924 . . . . .	3,087
1928 . . . . .	3,938	1923 . . . . .	3,477

According to these figures the crop of 1932 was approximately equal to that of 1931, and therefore larger than that of any previous year except 1928 and 1930. It must however be borne in mind that the estimate for 1932 is still provisional ; it is to be anticipated that the definite results for several countries which are not yet available will increase the amount determined statistically by at least 40 million bushels. The last Canadian crop seems in fact to have been underestimated by about 20 million bushels ; that of Australia, according to a cablegram recently received from the Government, has just been increased by 10 million bushels ; lastly, that of France is, in reality, much larger than the provisional official figure indicates. It is, therefore, very probable that the 1932 production is fairly close to the result obtained in 1930, the year of most abundant crop since the record year of 1928.

(1) Not including the U. S. S. R., China, Turkey, Persia and Iraq.



The gradual increase of the world consumption of wheat (2), which had followed more slowly and at a certain distance the upward progress of world production in recent years, has been marked by a sudden check during the last season. According to the statistics supplied to the London Conference, the world consumption of wheat was as follows, in millions of bushels, the figures for 1932-33 being an approximate estimate :

1932-33 . . . . .	3,600	1927-28 . . . . .	3,543
1931-32 . . . . .	3,783	1926-27 . . . . .	3,408
1930-31 . . . . .	3,744	1925-26 . . . . .	3,290
1929-30 . . . . .	3,518	1924-25 . . . . .	3,252
1928-29 . . . . .	3,678	1923-24 . . . . .	3,377

Consumption during the present commercial season would seem, therefore, on the basis of these estimates, to show a decline of about 180 million bushels as compared with the preceding season. This result is due to several causes ; amongst the principal causes in the extra-European exporting countries is to be noted a great reduction in the quantities used stock-feeding on account of the large quantities of feed grains available, and, in other countries, the abundance of the crops and the low prices of other food-stuffs (rye, maize, potatoes, etc ) produced in the various countries, as well as the measures for the protection of the home markets.

Whilst in the previous season the world production proved to be insufficient completely to cover the needs of consumption and stocks were drawn upon, in the present season, on the contrary, the amount of the crop exceeds the needs, so that on 1 August next a further increase of stocks will be noted, which may be estimated at about 110 million bushels.

Statistical information on production, on quantities already exported and on stocks in the four great exporting countries make it possible to estimate roughly the exportable surpluses which will be found on 1 August in each of those countries; to these quantities must be added the quantities afloat, roughly estimated.

• *WHEAT : Exportable stocks at the end of the season  
(1 August) in million bushels.*

	1933	1932	1931	1930	1929	1928	1927
Canada . . . . .	195	127	131	118	119	82	47
United States . . . . .	350	336	277	244	204	90	76
Argentina . . . . .	55	39	60	36	102	68	49
Australia . . . . .	50	33	48	39	29	27	28
Afloat . . . . .	30	31	38	39	37	45	46
Total . . . . .	680	566	554	476	491	312	246

(2) Excluding that of the U. S. S. R., China, Turkey, Persia and Iraq, covered by the home production of those countries.

As will be seen, this phenomenon of the accumulation of world exportable stocks has not yet come to an end and the forecast for 1 August next is that there will be a new record. These figures do not take account of the stocks in the rest of the world, the statistical elements available in regard to these stocks not being such as to allow of calculations sufficiently precise. What may be stated is that some European countries on 1 August next will have much larger stocks than last year, particularly France and, to a less extent, Germany, Spain and Sweden. On the other hand, in several countries of Eastern Europe, the stocks will certainly be reduced to a minimum as a result of the very scant harvest obtained last year. As it is hardly likely that the diminution anticipated in this group of countries will be sufficient to compensate the increase in the other group and as it does not seem probable that in the other extra-European countries any very striking change will take place in the stocks we may arrive at the conclusion that in the whole of the world the stocks of wheat that will be carried over to the new season 1933-34 will be the largest so far recorded.

\* \* \*

In regard to the prospects of the next crop the information which had reached the Institute up to 20 June may be summarized as follows :

In Europe, there was in May almost everywhere beneficial rain ; only in a few areas, particularly in Spain, were there complaints of drought. On the other hand the low temperatures that characterized the greater part of May in almost all continental Europe slackened the development of crops, with the result that it was generally much behind normal. On the whole, however, and despite this backwardness, condition of winter crops (principally wheat and rye) at the beginning of June was in the majority of countries not very different, from and in some cases even better, than at the same date last year. Condition of spring crops was less satisfactory.

In the first fortnight of June weather in a great part of Western and South-eastern Europe continued to be cool with frequent rains and higher temperatures would appear necessary to secure good yields. In these circumstances crop results still depend to a large extent on the course of the season up to the time of harvest but in any case it is doubtful whether, for Europe as a whole, production can be as large as last year.

The countries which have already communicated to the Institute their crop forecasts are Spain, which announces a production approximately average but nearly 43 million bushels lower than the record production of last year and Greece, which anticipates an abundant production, 11 million bushels larger than that of 1932 and more than double the average of the years 1927-31.

In the U. S. S. R., weather conditions have been in general favourable to the cereal crops, the condition of which at the beginning of June was satisfactory. Beneficent rains also fell during the first half of June in most of the cereal-growing regions. Up to the present, the crop prospects are better than in 1932, a year of somewhat scanty production. It is reported, however, that in many places, the fields are badly infested by weeds.

The forecast of the United States winter wheat crop made on the basis of the crop condition on 1 June, gives a figure of 341 million bushels, this being slightly larger than the figure calculated on 1 May (337 million bushels). It is the worst crop that has been obtained in the United States for many years; it is only slightly more than half of the average crop of the period 1927-31. It is, moreover, doubtful whether even this estimate can be maintained, as further damage was reported towards 20 June as the result of excessive heat which brought about the premature ripening of the grain. The development of the spring wheat crops has, up to now, been completely satisfactory; the reports that have come to hand quite recently are, nevertheless, less optimistic on account of the heat wave which has somewhat damaged the crop and rain will very soon be necessary. Allowing even that the spring wheat crop will give a good yield (private experts estimate it on the basis of the state of the crop on 1 June at about 270 million bushels, as in 1932) the total production of wheat in the United States would not be sufficient completely to cover the normal needs of domestic consumption, for in the last five years domestic consumption has absorbed on the average 680 million bushels of wheat. The deficit can, however, only be of modest proportions in relation to the mass of stocks carried over from previous harvests, so that the quantities available in the United States for export in 1933-34 will still remain very considerable.

In Canada the condition of the crops, which was good at the beginning of June, on account of the frequent rains and the abundant reserves of moisture in the subsoil has become slightly worse, as in the United States, by reason of the too dry and hot weather of the middle of June. In several regions of the Prairie Provinces rain was keenly desired towards 20 June. The result of the crop depends more than ever on the weather which will prevail between now and the harvest.

India, in its last report, slightly increased the forecast of the crop, raising it to 347 million bushels, an increase of about 8 million bushels over last year. The production seems to be sufficient to cover domestic consumption and even to have a small surplus for export.

As for the other Asiatic countries, Syria and Palestine anticipate a somewhat scanty crop on account of the drought during the spring, the effects of which have only been partially attenuated by the rains that fell in May.

For the North African countries, the Institute has recently received from the Governments of Algeria, Tunis and Morocco, as well as from that of Egypt, the first forecasts of the crops of wheat and barley, the most important cereals in this group of countries.

For wheat the total crop for the three countries of French North Africa is estimated at 65.4 million bushels, as compared with 74.6 million bushels last year and 68.0 million bushels on the average during the five-year period 1927-1931. It is Tunis which has obtained the most scanty crop, 11.6 million bushels as compared with 17.5 million bushels in 1932, while Algeria, with 28.1 million bushels shows a decrease of only 1.1 million bushels as compared with 1932 and Morocco, with 25.7 million bushels a decrease of about 2.2 million bushels.

Egypt, mainly on account of the considerable reduction in the area cultivated, which fell from 1,760,000 to 1,410,000 acres, anticipates a crop much smaller than that of last year — 40.0 million bushels as compared with 52.6 million bushels in 1932 — and a little smaller than the average of the years 1927-1931, which amounted to 42.5 million bushels.

For the principal North African countries taken together, a wheat crop is anticipated 22 million bushels smaller than that of 1932 and 7 million bushels smaller than the average of the years 1927-31.

For barley the forecast of the crop is good in Morocco, somewhat scanty in Algeria and bad in Tunis. The total production of these countries shows a decrease of 9 million bushels (of 48 lb.) as compared with 1932 and of 5 million bushels as compared with the average. In Egypt also the crop is expected to be scanty.

Sowings in the southern hemisphere are almost finished; in Argentina they were carried out in good conditions and in Australia in satisfactory conditions, except in a part of New South Wales, where there are complaints of drought.

G. CAPONE.

*Germany* : Growth generally made good progress with the cool and for the most part moist weather of May. The backwardness caused by the drought and cold in April was largely compensated for and condition of winter cereals at the beginning of June was on the whole satisfactory. Spring cereals are considered to be in less satisfactory condition, their growth having been hindered by the low temperatures.

At the beginning of June condition of spelt was 2.3 against 2.5 on 1 May 1933 and on 1 June 1932.

*Austria* : The fine weather at the beginning of May continued only during the first week of that month. A further fall in temperature was accompanied by rain and, in the mountains, by snow. Toward mid May particularly there were heavy falls of snow in all the higher valleys of the Alps.

At the beginning of the third decade of May the weather was better but temperatures remained abnormally low. In the last days of the month a further fall of snow occurred in the Alps, bringing the frost-line down to 1000 metres.

Owing to these rather unfavourable conditions winter cereal sowings have been late. Those of spring cereals, particularly wheat, suffered from nocturnal frosts.

*Belgium* : In the first half of May the weather was rather cold. Toward the end of the month temperatures were higher. The very abundant rain on 25 and 26 May was very beneficial. Weather was not very favourable to growth, which was rather backward.

Wheat looks well but is generally rather sparse owing to insufficient tillering. Six-rowed barley is rather irregular and smut is frequently reported. Oats and rye have a good appearance.

*Bulgaria* : Due to frequent rains accompanied by wind, hail and snow in the mountain areas temperatures in May remained low almost throughout the country. These conditions retarded development of cereals. The crops were, however, in good condition at the beginning of June, floods, hail, laying and rust not having caused any considerable damage.

*Spain* : The prolonged drought of May greatly prejudiced winter cereal crops; condition of spring crops is not very satisfactory.



COUNTRIES	AREA SOWN					CROP CONDITION (†)								
	1932-33		Average 1926-27 to 1930-31	% 1932-33		1-VI-1933			1-V-1933			1-VI-1932		
	1931-32			1931-32		a)	b)	c)	a)	b)	c)	a)	b)	c)
	Thousand acres		= 100	= 100										
RYE.														
w) Winter crop														
s) Spring crop.														
Germany. . . (w)	10,991	10,830	11,248	101.5	97.7	2.7	—	—	2.9	—	—	2.5	—	—
" " " (s)	...	166	198	...	...	2.8	—	—	—	—	—	2.8	—	—
*Austria . . . (w)	...	901	887	...	...	2.0	—	—	2.1	—	—	2.5	—	—
" " " (s)	...	43	47	...	...	2.3	—	—	2.2	—	—	2.5	—	—
Belgium . . . (w)	551	562	565	98.0	97.6	—	—	—	—	—	—	—	—	—
Bulgaria . . .	526	544	549	96.8	95.9	110	—	—	120	—	—	130	—	—
Spain . . .	1,458	1,516	1,588	96.2	91.8	—	—	91	115	—	—	—	—	—
*Estonia . . .	...	364	351	...	...	1) 114	—	—	—	—	—	1) 108	—	—
Finland . . .	544	544	538	100.0	101.1	e)	—	—	—	—	—	e)	—	—
France 2) . . .	1,740	1,763	1,866	98.7	93.2	—	—	—	75	—	—	—	—	—
Greece . . .	170	181	142	93.7	119.5	—	—	—	—	—	—	—	—	—
*Latvia . . . (w)	652	593	—	110.0	—	110	—	—	125	—	—	120	—	—
Lithuania . . (w)	1,182	1,186	1,167	99.7	101.3	110	—	—	106	—	—	123	—	—
Luxemburg . .	20	17	18	114.3	111.9	2.1	—	—	2.3	—	—	2.1	—	—
*Netherlands .	...	407	476	...	...	—	70	—	—	—	1) 65	1) 72	—	—
*Poland . . . (w)	...	13,887	14,046	...	...	3.4	—	—	3.2	—	—	3.2	—	—
" " " (s)	...	64	74	...	...	—	—	2.7	—	—	—	3.1	—	—
*Rumania . . . (w)	751	680	—	110.5	—	e)	—	—	—	—	—	—	—	—
*Sweden 5) . . (s)	533	501	—	106.2	—	105	—	—	—	—	—	—	—	—
" " " (s)	14	12	—	109.8	—	—	—	—	—	—	—	—	—	—
*Switzerland .	...	46	48	...	...	—	—	96	—	—	96	—	—	97
Czechoslovakia	2,531	2,585	2,545	97.9	99.4	a) 2.7	—	—	u) 2.9	—	—	w) 2.8	—	—
Yugoslavia . . (w)	530	511	479	103.7	110.6	—	—	—	—	—	—	—	—	—
U. S. S. R. . . .	63,007	64,402	64,292	97.8	98.0	—	—	—	—	—	—	—	—	—
Total Europe . (m)	20,243	20,239	20,705	100.0	97.8	—	—	—	—	—	—	—	—	—
" " " (n)	83,250	84,641	84,997	98.4	97.9	—	—	—	—	—	—	—	—	—
Canada . . . (w)	6) 454	7) 614	7) 704	74.0	64.5	—	—	b) 94	—	—	89	—	—	86
" " " (s)	8) 146	7) 160	7) 256	91.3	57.1	—	—	—	—	—	—	—	—	—
United States . .	o) 2,854	7) 3,271	7) 3,254	87.3	87.7	—	—	73.7	—	—	—	—	—	80.4
Total America . .	3,454	4,045	4,214	85.4	81.9	—	—	—	—	—	—	—	—	—
Algeria . . . . .	4	3	4	117.6	95.4	—	—	—	—	100	—	—	100	—
GRAND TOTAL. (m)	23,701	24,287	24,923	97.6	95.1	—	—	—	—	—	—	—	—	—
" " " (n)	86,708	88,689	89,215	97.8	97.2	—	—	—	—	—	—	—	—	—
BARLEY														
w) Winter crop.														
s) Spring crop.														
Germany. . . (w)	618	607	477	101.7	129.6	2.9	—	—	2.8	—	—	2.8	—	—
" " " (s)	...	3,268	3,328	...	...	2.6	—	—	—	—	—	2.5	—	—
*Austria . . . (w)	...	18	21	...	...	2.2	—	—	2.3	—	—	2.7	—	—
" " " (s)	...	398	376	...	...	2.3	—	—	2.3	—	—	2.8	—	—
Belgium . . . (w)	79	78	72	101.2	109.2	—	—	—	—	—	—	—	—	—
Bulgaria . . .	576	568	601	101.3	95.8	110	—	—	120	—	—	120	—	—
Spain . . .	4,521	4,837	4,516	93.5	100.1	105	—	—	115	—	—	—	—	—
France 2) . . (w)	430	414	415	103.9	103.5	—	—	—	75	—	—	—	—	—
" " " (s)	1,383	1,445	1,351	95.7	102.4	—	—	—	73	—	—	—	—	—
*Scotland . . .	...	69	105	...	...	—	100	—	—	—	—	—	—	95
Greece . . .	558	533	481	104.7	116.0	—	—	—	—	—	—	—	—	—
*Lithuania . .	...	495	487	...	...	110	—	—	—	—	—	117	—	—
Luxemburg . .	8	10	9	77.5	81.3	2.1	—	—	2.5	—	—	2.3	—	—
*Netherlands .	...	50	72	...	...	—	—	68	—	—	1) 68	1) 74	—	—
*Poland . . . (w)	...	102	166	...	...	3.1	—	—	—	3.0	—	3.3	—	—
" " " (s)	...	2,880	2,819	...	...	—	—	2.9	—	—	—	3.5	—	—
*Rumania . . . (w)	188	193	—	97.4	—	e)	—	—	—	—	—	—	—	—
*Switzerland .	...	18	16	...	...	—	—	98	—	—	97	—	—	96
Czechoslovakia	1,642	1,762	1,766	93.2	93.0	s) 2.6	—	—	s) 2.8	—	—	s) ...	—	—
Yugoslavia . . (w)	579	609	592	95.1	97.8	—	—	—	—	—	—	—	—	—
U. S. S. R. . . . (w)	711	872	1,009	81.6	70.5	—	—	—	—	—	—	—	—	—
Total Europe . (m)	10,394	10,863	10,280	95.7	101.1	—	—	—	—	—	—	—	—	—
" " " (n)	11,105	11,735	11,289	94.7	98.4	—	—	—	—	—	—	—	—	—

COUNTRIES	AREA SOWN					CROP CONDITION (†)								
	1932-33	1931-32	Average 1926-27 to 1930-31	% 1932-33										
				1931-32 = 100	Aver. = 100									
Thousand acres					1-VI-1933			1-V-1933			1-V-1932			
						a)	b)	c)	a)	b)	c)	a)	b)	c)
Canada . . . . .	8) 3,696	7) 3,758	7) 4,728	98.4	78.2	—	—	95	—	—	—	—	—	93
United States . . .	8) 12,971	7) 13,213	7) 11,947	98.2	108.6	—	—	80.4	—	—	—	—	—	82.3
Total America . .	16,667	16,971	16,675	98.2	100.0	—	—	—	—	—	—	—	—	—
*Japan . . . . .	—	2,107	2,198	—	—	—	f)	—	—	—	g)	—	f)	—
Syria and Lebanon .	721	794	824	90.9	87.6	—	—	—	—	—	85	—	—	80
Total Asia . . .	721	794	824	*90.9	87.6	—	—	—	—	—	—	—	—	—
Algeria . . . . .	3,301	3,339	3,427	98.9	96.3	—	—	85	—	100	—	—	100	—
Cyrenaica . . . . .	71	49	88	146.0	80.6	—	—	—	—	—	—	—	—	—
Egypt . . . . .	286	366	359	78.3	79.8	104	—	—	101	—	—	109	—	—
French Morocco . .	3,471	3,298	3,008	105.2	115.4	—	—	—	—	—	—	—	—	—
Tunis . . . . .	865	1,507	1,197	57.4	72.2	—	—	75	—	—	—	—	—	—
Total Africa . . .	7,994	8,559	8,079	93.4	99.0	—	—	—	—	—	—	—	—	—
GRAND TOTAL. (m)	35,776	37,187	35,858	96.2	99.8	—	—	—	—	—	—	—	—	—
(n)	36,487	38,059	36,867	95.9	99.0	—	—	—	—	—	—	—	—	—
OATS.														
w) Winter crop														
s) Spring crop														
*Germany . . . . .	—	8,117	8,583	—	—	2.8	—	—	—	—	—	2.7	—	—
*Austria . . . . .	—	784	759	—	—	2.4	—	—	—	2.4	—	2.3	—	—
Bulgaria . . . . .	306	281	330	108.9	92.9	120	—	—	120	—	—	130	—	—
Spain . . . . .	1,599	1,926	1,926	83.0	83.0	—	—	99	115	—	—	—	—	—
France 2) . . . . .	2,180	2,123	2,036	102.7	107.1	—	—	—	73	—	—	—	—	—
(n)	6,203	6,293	6,540	98.6	94.9	—	—	—	—	—	69	—	—	—
*Scotland . . . . .	—	867	872	—	—	105	—	—	—	—	—	—	—	—
Greece . . . . .	332	331	293	100.1	113.2	—	—	—	—	—	—	—	—	—
*Lithuania . . . . .	—	931	820	—	—	110	—	—	—	—	—	113	—	—
Luxemburg . . . . .	69	74	72	93.3	95.0	2.3	—	—	2.5	—	—	2.3	—	—
*Poland . . . . .	—	5,486	5,224	—	—	—	—	2.8	—	—	—	3.4	—	—
*Rumania . . . . .	—	1,956	2,655	—	—	—	—	—	—	—	—	—	—	—
*Switzerland . . . .	—	41	49	—	—	—	—	98	—	—	96	—	—	93
Czechoslovakia . . .	2,011	2,027	2,078	99.2	96.7	2.9	—	—	2.9	—	—	2.7	—	—
*Yugoslavia . . . . .	73	87	—	83.2	—	—	—	—	—	—	—	—	—	—
Total Europe . . .	12,700	13,057	13,275	97.0	95.6	—	—	—	—	—	—	—	—	—
Canada . . . . .	8) 13,250	7) 13,148	7) 12,997	100.8	101.9	—	—	95	—	—	—	—	—	95
United States . . .	8) 40,003	7) 41,224	7) 39,590	97.0	101.0	—	—	78.7	—	—	—	—	—	78.9
Total America . .	53,253	54,372	52,587	97.9	101.3	—	—	—	—	—	—	—	—	—
Syria and Lebanon . .	28	28	35	101.8	80.6	—	—	—	—	100	—	—	100	—
Algeria . . . . .	524	488	592	107.4	88.5	—	—	85	—	100	—	—	100	—
French Morocco . . .	74	56	83	131.6	88.9	—	—	—	—	—	—	—	—	—
Tunis . . . . .	74	54	104	136.4	71.0	—	100	—	—	—	—	—	—	—
Total Africa . . .	672	598	779	112.4	86.1	—	—	—	—	—	—	—	—	—
GRAND TOTAL . . .	66,653	68,055	66,676	97.9	100.0	—	—	—	—	—	—	—	—	—

\*) Countries not included in the totals. — a) Above the average. — b) Average. — c) Below the average. — d) Very good. — e) Good. — f) Average. — g) Bad. — h) Very bad. — m) Not including U.S.S.R. — n) Including U.S.S.R. — t) See explanation according to the various systems, page 363. — 1) About the middle of the previous month. — 2) Sowings to 1 May — 3) The figures for 1932-33 and 1931-32 have been calculated taking into account the results of the new agricultural survey. — 4) Average 1928-29 to 1930-31. — 5) Provinces of Svealand and Gotland. — 6) Area expected to be harvested. — 7) Area harvested. — 8) Area to be planted according to farmers' intentions. — 9) Winter and spring crops

*Production of Cereals in Spain.*

	1933	1932	Average 1927-1931	% 1932 = 100	% 1933 Average = 100
Wheat (ooo centals) . . . . .	84,834	110,526	84,342	76.8	100.6
(ooo bushels) . . . . .	141,387	184,206	140,566		
Rye (ooo centals) . . . . .	12,309	14,507	12,151	84.8	101.3
(ooo bushels) . . . . .	21,980	25,905	21,699		
Barley (ooo centals) . . . . .	49,826	63,632	44,731	78.3	111.4
(ooo bushels) . . . . .	103,807	142,569	93,192		
Oats (ooo centals) . . . . .	13,372	18,309	13,588	73.0	98.4
(ooo bushels) . . . . .	41,787	57,215	42,461		

*Estonia* : The long period during which autumn temperatures remained at a high level favoured sowings of winter crops, which were made in good conditions. The winter was relatively short and damage insignificant. Toward the middle of May condition of winter crops was better than at the corresponding date last year.

*Irish Free State* : The weather during May was favourable to growth and all crops made excellent progress. No serious damage was reported from any cause.

*France* : Apart from sporadic storms there was very little rain during the third week of May and already complaints of droughts began to be heard especially in the South-East and South-West. Toward the end of the month these heavy storm rains were fairly widely distributed and also days with low temperature but during the first week of June the weather was hot and dry, a condition which ended in the second week, with light rains, not however very generally diffused, so that a good many districts complained of drought.

Speaking generally the condition of the growing cereals remains fairly satisfactory. For wheat the crop is expected to be sufficient for the requirements of the coming season, while for other cereals an average harvest is expected.

*Great Britain and Northern Ireland* : May was on the whole warm and dry and favourable to crops, though in parts of England and Wales by the end of the month more rain was needed.

Cereals looked healthy and promising at the end of the month. Work on the land was well forward. In England and Wales the area under wheat is appreciably greater than last year, those under barley and oats slightly smaller.

*Greece* : Beneficial rains fell in the second half of April and the first half of May and largely neutralized the losses due to the prolonged drought of the first half of April. The drought effects were more serious and more difficult to repair in the Salonica and Serres districts, where barley and oats were almost everywhere destroyed and the yield of wheat was appreciably reduced.

Weather in the second half of May favoured cereals and on the whole a production above that of last year is expected.

According to the approximate forecast, telegraphed to the Institute by the Ministry of Agriculture of Greece, the cereal harvest is likely to be very abundant this year.



The figures of the first estimate of the 1933 crop, compared with those of the first estimate and final returns of the 1932 harvest are as follows :

	1933		Forecast		1932		Final return	
	ooo centals	ooo bushels	ooo centals	ooo bushels	ooo centals	ooo bushels	ooo centals	ooo bushels
Wheat . . . . .	16,800	28,000	11,023	18,372	10,241	17,067		
Barley . . . . .	5,300	11,000	5,291	11,023	4,264	8,883		
Oats . . . . .	3,100	10,000	2,205	6,889	2,189	6,841		
Rye . . . . .	1,800	3,000	882	1,575	1,365	2,437		

The yield per acre of wheat would be 10 centals (16 bushels) for 1 acre in 1933 as compared with 5 centals (9 bushels) for 1 acre in 1932. The very optimistic estimate may be justified partly by the increase in area under the crop, which exceeds the 1932 area by 12.2 % and the average for 1927 to 1931 by 25.5 %. In addition the weather this spring and during the month of May has been much more favourable than in the earlier years. It should also be borne in mind that the present estimate is only a very approximate forecast and may be considerably modified in the final return.

*Hungary* : In the two weeks from 23 May to 7 June the weather was characterized by relatively low temperatures and very irregular distribution of precipitation. From 24 to 28 May the maximum temperature oscillated around 18° C and after 29 May between 20° and 25° C. Toward the end of the period under consideration in the eastern districts day temperature again fell below 20° C.

Night temperature fell to 6-8° C. in the first days of the period ; after 27 May it remained above 10° C. but toward the end of the period it fell to 3° C. in some places.

In many localities hail was reported but damage was not very serious.

Toward 7 June appearance of cereals was generally good. By that date earing was in progress for all cereals. Flowering of winter rye had begun. For future development and for normal ripening (particularly as regards spring cereals) higher temperatures are necessary.

The first official forecast of cereal yields is as follows : for wheat, barley and oats a good average ; for rye above average.

*Italy* : In May, despite the generally rather unfavourable weather, wheat remained in good condition. Harvesting of early varieties was begun. In the South and in the Islands oats and barley have been harvested and yields are good.

*Latvia* : Though in May there were many sunny days temperatures remained on the whole below normal almost everywhere. Precipitation remained generally more than 50 % above normal and in the south even 100 % above it. In 46.0 % of correspondent's reports condition of winter wheat was given as average, in 44.2 % above average and in 9.8 % below average. The corresponding figures for winter rye were 38.1 %, 53.7 % and 8.2 %.

*Luxemburg* : Weather in May was generally favourable.

At the beginning of June condition of meslin was, according to the system of the country, 2.0 against 2.4 on 1 May and 2.1 on 1 June 1932.

*Norway* : The past winter was exceptionally mild taking the country as a whole. There was only a little snow, which soon melted. The spring arrived only at the usual time, however. At the end of April and beginning of May there was little

precipitation and in some areas the fields were very dry. Thanks to the relatively high temperature preparations for spring crops were carried out rapidly and in good conditions.

*Poland* : After the dry and rather cold weather of the latter half of April there was a change in the first half of May to milder conditions with abundant rain. In the first half of May soil moisture was considered sufficient by 50 % of the 4,955 crop correspondents, insufficient by 35 % and excessive by 15 %. Temperature was sufficiently high in the greater part of the country (76 % of the reports).

Weather in the latter half of April caused deterioration in crop condition of winter cereals, in the first half of May, however, there was an improvement and conditions favoured spring crops. It was, nevertheless, reported by 79 % of the crop correspondents that development was backward, only 21 % of the reports indicating normality.

There has been no very considerable damage. Winter rye, however, has suffered especially on light unmanured lands. In many places damage by larvae of *Agrotis segetum* is reported in the departments of Silesia and Cracow. In the latter department rust has been reported on winter wheat while in the department of Stanislawow field-mice have caused much damage.

In the latter half of May and in the first days of June crop condition according to agricultural correspondents (620 reports) deteriorated somewhat in the case of all cereals except winter rye; this deterioration was due to insufficiency of soil moisture as well as of sunshine and warmth.

Flowering of rye took place under favourable conditions.

In the south rust has been observed on winter wheat.

*Portugal* : Weather conditions have accelerated the ripening of cereals, for wheat a crop slightly larger than normal is anticipated; according to anticipations, rye, barley and oats will give somewhat scanty yields.

*Rumania* : During the second half of May and the first ten days of June, the weather remained cool and damp almost without interruption. During this period the temperature was below the mean, whilst the rains were abundant. Hail was reported at the beginning of June, particularly in Moldavia and Bessarabia, but did not cause very serious damage. Toward the middle of June there were floods in five departments.

As a result of these weather conditions all the cereal crops were very backward in comparison with normal years. The crops are, however, vigorous and promise good development, although the excessive moisture has here and there caused the wheat to turn yellow. Toward the middle of June isolated cases of rust were reported.

In the unanimous opinion of competent persons it will be possible to obtain good crops of cereals provided there is a period of warmer weather. It is also anticipated that the occurrence of a sudden wave of too intense heat may cause damage.

*Switzerland* : The month of May was characterized by skies in prevalence cloudy and by rainy and cold weather; in the high regions the temperature was at times truly wintry. The rains, having followed a dry winter, gave a vigorous impulse to vegetation. Winter cereals suffered comparatively little from the bad weather that occurred in May. Wheat and spelt, in particular, are very well developed, while rye is in general a little lighter. The sowings of spring cereals suffered at times from the low temperature as well as from the wet, but, generally speaking, they have developed satisfactorily. In some cases fields are to be found invaded by weeds.

At the beginning of June the condition of the spelt crop was reported as 101 (compared with 96 on May 1 of this year and 97 on June 1, 1932). That of meslin was respectively 101, 97 and 97.

*Czechoslovakia* : The rather unfavourable weather that characterized April did not improve sufficiently in May to allow a complete recovery of the crops, which were very backward. The warmer weather at the beginning of May and the abundant precipitation in the middle of the month favoured growth and would have permitted development if persistent cold and drought had not intervened in the latter half of the month. Cold days were followed by night frosts and in the mountains snow covered the ground in some localities even toward the end of the month. These unfavourable conditions were aggravated by the northerly and northwesterly winds that prevailed especially in the eastern parts of the country and, owing to their great violence, dried the soil and deprived it of the little moisture it possessed.

Cereals were retarded and a smaller yield in the straw may be expected, particularly for rye. The unfavourable influence of the weather was appreciably demonstrated in spring wheat. Rye had already eared and in the southern and eastern parts of the country had flowered toward the end of the month. Condition of cereals on 1 June was above average and was better for winter wheat and worse for oats. Autumn cereals were in better condition in Subcarpathian Russia and Slovakia; in Bohemia and in Moravia-Silesia their condition was less satisfactory.

*Yugoslavia* : The first half of May was characterized by variable, somewhat hot and dry weather. These conditions generally favoured cereals. In the latter half of the month the weather was rainier and colder and snow fell on the mountains. The frequent rains and the wind caused laying of barley and wheat in some areas. The general condition of cereals at the beginning of June was considered good.

*U. S. S. R.* : According to data published by the People's Commissariat for Agriculture sowings of all spring crops from 15 May (for the period from 10 April to 10 May see the Crop Report of last month) were as follows.

<i>Area sown</i> (thousand acres)				
	1933	1932	1931	1930
On 15 May . . . . .	131,153	108,191	111,083	124,837
20 " . . . . .	155,975	135,393	139,869	139,752
25 " . . . . .	176,186	160,154	163,984	157,732
1 June . . . . .	194,880	185,658	186,320	172,415
5 " . . . . .	206,978	203,709	208,481	180,923
10 " . . . . .	217,211	216,757	221,457	196,247
Area planned . . . . .	234,754	253,040	235,495	229,811
Area actually sown . . . . .	...	238,460	239,449	214,491

Though sowing this year from its commencement to 10 May was much more rapidly carried out than in 1932 and 1931 but less rapidly than in 1930 (a year when the spring was very late) the area sown on 15 May 1933 had already exceeded that sown on the same date in 1930 and on 10 June had reached 92.5 % of the plan, against 85.7 % in 1932, 89.6 % in 1931 and 85.4 % in 1930.

To attain the figure foreseen by the plan for this year there had still to be sown on 10 June about 17.5 million acres against 21.7 million actually sown in 1932, 17.3 million in 1931 and 18.3 million in 1930.

Of the total area of 217,211,000 acres sown on 10 June the *kolkhozi* had sown 159,618,000 acres, 9.67 % of their plan, the *sovkhozi* 25,074,000 acres, 100.9 % of their plan and the individualistic holdings 32,520,000 acres, 72.5 % of their plan.

During May weather was on the whole favourable; there were frequent rains, in many cases abundant, in the principal cereal regions and crop condition at the beginning of June was satisfactory. In many regions, especially in Ukraina and Northern Caucasus considerable infestation by weeds was reported.

To protect the crops against weeds an active campaign for hoeing is being carried on. On 10 June hoeing had been carried out on 23,003,000 acres.

*Canada*: According to a telegram of 30 May from the Canadian Government, the spring season was slightly late but very promising. Seeding of spring wheat had been practically completed throughout the West. Germination was slow but strong. Spring precipitation was ample and particularly heavy rains fell at the middle of the last week. Grasshoppers were threatening crops in Manitoba, south eastern Saskatchewan and southern Alberta.

Reports substantiated the reduction in the wheat acreage (of about 5 %) indicated at the beginning of May.

The weather during the first week of June was hot and rainfall, limited to showers, gave rise to complaints of moisture shortage from the three Prairie Provinces. Growth was generally rapid and strong. In Manitoba moderate rains fell on the 6th of the month; the weather in general turned cooler with showers forecast in each Province. Grasshoppers were prevalent in Manitoba and southeastern Saskatchewan and were reported in scattered localities elsewhere; the poisoning campaign had been effective. Wheat seedlings were reported to be free from disease in Saskatchewan. No hail damage had occurred.

According to a telegram of 9 June seeding of spring crops was late in every province but the season was well advanced, particularly in Quebec, Ontario, Manitoba and Saskatchewan. Crop prospects had been changed very little by the weather conditions since 31 May; in Manitoba and Saskatchewan, prospects were uniformly good, rainfall having practically relieved the drought area of recent years. Rains were however, desirable in many districts, west-central Saskatchewan and central Alberta were dry. In Alberta, 95 % of the wheat acreage was lower in condition than in 1932.

In the week ended on 14 June the weather was cool and rather dry. In the great cereal-producing areas, particularly in Manitoba, crops are generally promising though the areas in Saskatchewan and Alberta where more moisture is wanted are more extensive than in the preceding week. An invasion of grasshoppers threatens in the South, but so far remains well under control.

Condition of mixed grains on 1 June was 97 against 95 at the same date last year.

*United States*: In the latter part of May weather was generally favourable and condition of spring wheat improved. Growth of spring wheat continued to be good in the earlier part of June but winter wheat was damaged by the great heat.

Production of winter wheat in 1933 is now estimated at 204,600,000 (341,000,000 bushels) against 277,290,000 (402,151,000) in 1932, a decrease of 26.2 %, and 372,321,000 (620,536,000) in 1927-31, a decrease of 45.0 %. Production of winter rye is estimated at 17,024,000 centals (30,400,000) bushels against 22,319,000 (39,855,000) in 1932, a decrease of 23.7 % and 22,608,000 (40,371,000) in 1927-31, a decrease of 24.7 %.

*India*: The third estimate of wheat production gives a figure of 208,298,000 centals (347,163,000 bushels) against the corresponding estimates of 203,773,000 (339,621,000)

in 1931-32 and 202,003,000 (336,672,000) on the average of the five years ending 1930-31, the increase this year being thus respectively 2.2 % and 3.1 %. Crop condition in May was reported to be generally very good :

In the Punjab standing crops were at the end of May in average to good condition; light rain had, however, damaged wheat on the threshing floors in some districts. Some hail damage to spring crops occurred in the latter part of May in Hissar and Dera Ghazi Khan.

*Japan* : On 1 June condition of wheat and barley was average. Weather was favourable.

*Syria and Lebanon* : The abundant and well distributed rains of spring partly restored the situation of the crops compromised by the drought and cold of the winter.

*Algeria* : The scirocco, which blew during the early days of the month of May, following on spring frosts, was injurious to the growing crops. Drought persisted up to the end of the month and then some rains, which came too late, slightly improved the position of cereals, the state of ripeness of which was not too far advanced. The condition of wheat and barley on 1 June was mediocre. The first forecasts of the cereal crops are as follows .

		1933	1932	Average 1927-31	% 1933	
					1932 = 100	Av. = 100
Wheat	(000 cent.) . . . . .	16,865	17,542	18,007	96.1	93.7
	(000 bush.) . . . . .	28,108	29,236	30,012		
Barley	(000 cent.) . . . . .	14,396	14,833	17,277	97.1	83.3
	(000 bush.) . . . . .	29,993	30,902	35,995		
Oats	(000 cent.) . . . . .	3,153	2,786	4,138	113.1	76.2
	(000 bush.) . . . . .	9,852	8,707	12,932		

*Cyrenaica* : In the east the crop may be considered discreet, in the west bad, especially in the case of wheat.

*Egypt* : During the month of May the weather has been altogether favourable to the ripening of wheat. The harvest is over in Upper Egypt and is still in progress for the general crops in the other regions. According to information received from the Ministry of Agriculture at Cairo wheat production in 1933 is estimated at 23,372,000 centals (38,953,000 bushels), or 74.1 % of that of last year, 31,552,000 centals (52,586,000 bushels), and 91.6 % of the average of the preceding years, 25,524,000 (42,539,000).

The yield per acre is expected to be higher than the average, but lower than last year's yield.

The barley harvest is completed and the production is estimated at 4,456,000 centals (9,284,000 bushels) as compared with 5,792,000 (12,067,000) in 1932 and with 5,340,000 (11,126,000) the average for the preceding five years. Percentages : 76.9 and 83.4. The yield per acre is slightly above the average, although lower than that of last year.

*French Morocco* : Apart from some local and sometime very violent storms, during May there has hardly been any rainfall. The weather has been hot with gusts of wind which have damaged the cereals, having caused scald in many places. The level of the wells is stationary, the flow of the wadis is markedly diminished and the *dayas* (rain pools) have almost entirely disappeared.

Early barleys and wheats are now being harvested and it would appear now that the crops will be conspicuously less than was anticipated last month, both on account of

the drought and hot winds which have caused scald in many places and also of attacks by *cecidomya* reported at Fez, Meknes, in the Gharb, in Chaouia and, particularly violently, at Doukkala and Abda. In addition rain and hail storms have caused severe damage in the interior of the country. In the districts of Fez the soft wheat crops have greatly increased among the natives, but the yield, in common with that of the hard wheats, will not come up to anticipations as a result of too late sowings.

Barleys were further advanced than wheats and have been less unfortunate and, as a whole, despite considerable variations in yield, should give an average yield. In addition the wheats themselves appear to have shown better resistance among the good European crops than among the native and the selected varieties and, while showing a lower specific gravity than last year, appear likely to give a satisfactory yield.

The first forecasts of the cereal harvests are as follows.

	1933	1932	Average 1927-31	% 1932 = 100	% 1933 Average = 100
Wheat (000 centals) . . . . .	15,433	16,782	15,738	92.0	98.1
(000 bushels) . . . . .	25,722	27,970	26,229		
Barley (000 centals) . . . . .	23,767	22,630	21,725	105.0	109.4
(000 bushels) . . . . .	49,515	47,147	45,261		
Oats (000 centals) . . . . .	701	405	673	172.8	104.0
(000 bushels) . . . . .	2,190	1,267	2,105		

*Turns* : Some losses have been caused to cereals by frosts, drought and attacks of *cecidomya*. The first estimates of cereal crops are as follows :

	1933	1932	Average 1927-31	% 1932 = 100	% 1933 Av = 100
Wheat (000 cent.) . . . . .	6,945	10,172	7,015	66.3	99.0
(000 bush.) . . . . .	11,574	17,453	11,692		
Barley (000 cent.) . . . . .	2,646	7,496	4,010	35.3	66.0
(000 bush.) . . . . .	5,512	15,616	8,355		
Oats (000 cent.) . . . . .	661	617	789	107.1	83.8
(000 bush.) . . . . .	2,067	1,929	2,466		

## MAIZE

*Austria* : Due to the cold weather at the beginning of June sprouting had not everywhere begun. Appearance was rather unsatisfactory. On 1 June condition was 2.8 against 2.5 on 1 June 1932.

*Bulgaria* : The area sown this year shows, according to the first estimates, a decrease (of 7 %) with respect to last year and remains almost the same as the average for 1927-31. The abundant rains accelerated development and despite frequent storms and hail during May crop condition at the beginning of June was good.

*Hungary* : Toward 7 June development was very slow due to cold. The plants were low and yellow. Hoeing was in progress. For normal development higher temperatures were required and in some localities moisture.

*Portugal* : On the high and dry lands on which water is not available for irrigation maize has suffered from the drought and is not in good condition. However, as the

## Maize.

COUNTRIES	AREA					PRODUCTION							
	1932	1931	Average	% 1932		1932	1931	Average	1932	1931	Average	% 1932	
	—	—	1926	—		—	—	1926	—	—	1926	—	
	1932/33	1931/32	to 1930	1932/33		1932/33	1931/32	to 1930	1932/33	1931/32	to 1930	1932/33	1931/32
	1,000 acres			= 100		1,000 centals			1,000 bushels of 56 lbs			= 100	
Austria . .	148	152	145	97.2	102.4	2,690	2,794	2,508	4,803	4,990	4,479	96.3	107.2
Bulgaria . .	1,829	1,682	1,693	108.8	108.0	23,246	19,594	15,239	41,511	34,989	27,212	118.6	152.5
Spain . . .	1,102	1,053	1,044	104.7	105.6	15,280	14,778	13,215	27,286	26,389	23,598	103.4	115.6
France . . .	813	855	843	95.0	96.5	10,037	13,789	9,695	17,924	24,623	17,312	72.8	103.5
Greece . . .	654	618	513	105.8	127.5	4,707	3,499	3,597	8,406	6,248	6,423	134.5	130.9
Hungary . .	2,905	2,720	2,652	106.8	109.6	53,617	33,459	35,897	95,746	59,749	64,102	160.2	149.4
Italy 1) 2)	3,259	3,206	3,515	101.7	92.7	61,906	40,354	52,449	110,546	72,061	93,659	153.4	118.0
*Poland . .	322	244	225	132.2	143.1	4,569	2,553	2,167	8,159	4,559	3,870	179.0	210.8
Portugal . .	240	243	222	98.7	108.2	...	2,296	1,968	...	4,099	3,515	...	...
Rumania . .	11,803	11,749	10,851	100.5	108.8	8,947	9,824	8,217	15,976	17,543	14,673	91.1	108.9
Switzerland .	2	3	3	97.1	75.9	132,123	133,674	101,569	215,934	238,704	181,374	98.8	130.1
Czechoslov.	331	344	347	96.2	95.6	60	64	77	106	114	138	93.1	77.1
Yugoslavia .	6,229	5,901	5,342	105.5	116.6	6,819	5,020	5,272	12,176	8,965	9,415	135.8	129.3
Total Europe	30,336	29,456	28,034	103.0	108.3	429,668	350,025	315,820	767,265	625,047	563,966	122.8	136.0
*U. S. S. R. .	9,084	9,741	8,483	93.3	107.1	...	...	69,622	...	...	124,325	...	...
Canada . . .	130	132	159	98.7	81.9	2,832	3,051	3,172	5,057	5,449	5,665	92.8	89.3
U. S. A. . .	107,729	105,301	99,456	102.3	108.3	1,628,505	1,437,691	1,441,278	2,908,045	2,567,306	2,573,710	113.3	113.0
Mexico . . .	7,945	8,346	7,692	95.2	103.3	42,816	47,150	40,990	76,458	81,196	73,196	90.8	104.5
Total N. Am.	115,804	113,779	107,307	101.8	107.9	1,674,153	1,487,892	1,485,440	2,989,560	2,656,951	2,652,571	112.5	112.7
Syria & Leb.	44	65	120	68.0	37.0	403	730	1,352	719	1,303	2,415	55.2	29.8
Turkey . . .	830	903	772	91.9	107.5	8,267	11,423	8,678	14,762	20,398	15,497	72.4	95.3
Algeria . . .	20	24	24	84.3	82.9	122	133	144	217	238	257	91.5	84.6
Egypt . . .	2,043	2,194	2,065	93.1	99.0	42,591	43,793	42,581	76,055	78,202	76,038	97.3	100.0
Eritrea . . .	7	22	16	33.3	47.6	66	240	97	118	429	174	27.5	67.9
Kenya 3) . .	166	161	199	103.7	83.7	2,763	1,525	2,804	4,933	2,724	5,008	181.1	98.5
Fr. Morocco	856	864	588	99.1	145.8	2,619	3,003	3,213	4,677	5,363	5,737	87.2	81.5
Ital. Somal.	24	53	39	45.1	61.0	213	521	417	380	931	745	40.8	51.0
Tunis 4) . .	44	45	41	99.0	108.2	121	110	109	217	197	194	110.0	111.3
Total Africa.	3,160	3,363	2,972	94.0	106.3	48,495	49,325	49,365	86,597	88,084	88,153	98.3	98.2
Argentina (a)	*14,540	*14,468	*12,180	100.5	119.4	—	—	—	—	—	—	—	—
(b) . . .	9,301	9,431	9,713	98.6	95.8	147,710	164,334	177,537	263,769	293,454	317,031	89.9	83.2
Un. of South Africa 3)	6,022	6,026	5,413	99.9	111.2	19,100	30,640	29,137	34,107	54,714	52,031	62.3	65.6
GRAND TOTAL	185,497	183,033	154,831	101.5	107.2	2,327,706	2,094,369	2,067,829	4,156,779	3,730,951	3,691,664	111.1	112.6

\* Countries and figures not included in the totals. — §) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production but not those of area are available. — a) Area sown. — b) Area harvested. — s) Spring crop (maize). — f) Summer crop (cinquintino). — 1) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 2) Average 1927-30. — 3) European crop. — 4) Maize and sorghum.

bulk of the crop is grown in the naturally wet or irrigated regions, sowing is now in full swing. It is hoped, if the weather is good, to obtain a good crop, inasmuch as the maize grown in the dry regions has not a preponderant influence over the final result.

*Rumania* : At the end of the first ten days of June the sowing of maize was everywhere completed. Growth is very backward on account of cool and wet weather.

For the ripening of maize a long and dry autumn is required. Toward 15 June the first hoeing was begun in isolated cases.

*Czechoslovakia* : On 1 June crop condition in the principal areas, Slovakia and Subcarpathian Russia, varied from average to below average.

*Yugoslavia* : Weather in the first half of May favoured sowings, which were completed toward 10 May throughout the country, and also germination. The persistent rains and cold in the second half of the month hindered development and crop condition at the beginning of June showed some deterioration.

*United States* : Crop condition improved during the last week of May thanks to the favourable weather, which continued in the first half of June. Sowing was almost completed by the end of the first week of June.

*French Morocco*. — The maize and sorghum crops are suffering from the drought in spite of the hoeing carried out by the colonists. Amongst the natives hoeing has been stopped for the moment in order that they may proceed with the barley harvest. Sowing continues in the high regions (Fez) and on the irrigated lands (Marrakesh).

## THE WORLD RICE SITUATION (\*)

World rice production in the past decade has shown two very marked upward movements — in 1924-25 and 1930-31 — with a less notable rise in 1928-29. In 1931-32, however, there was a pronounced fall in production. The data now available, which cover countries accounting in 1931-32 for about 93 % of the world total excluding China, for which no reliable statistics exist, point to a continuance of the decline in 1932-33 though to a moderate degree, the percentage fall in the past season amounting to about 1 %.

### *World production of rough rice (1).*

(million pounds).

Year	
1931-32 . . . . .	194,735
1930-31 . . . . .	201,680
1929-30 . . . . .	188,760
1928-29 . . . . .	192,420
1927-28 . . . . .	184,241
1926-27 . . . . .	185,013
1925-26 . . . . .	185,299
1924-25 . . . . .	186,864
1923-24 . . . . .	172,733

(1) Not including that of China, Turkey and Persia.

In the past season there were considerable increases of production in Burma and in Siam, while that of French Indo-China appears to have remained practically

(\*) Unless otherwise stated, all data have been converted to terms of milled rice and derivatives, the latter including broken rice and white flour or meal but not bran.



at the same level, the decrease in Cochin-China being balanced by the increase in Annam ; in Korea, Formosa, Japan and the Netherlands East Indies there were also increases. On the other hand there was a very great fall in production in India excluding Burma, the effect of this on the total being an indication of the critical part played by the area in determining the variation of world production as a whole. The variation of production in the principal producing countries, with the possible exception of French Indo-China, where the total has in the last few years remained relatively stable, and of Formosa, where there has been a continued increase, has been the reverse of that of the previous season.

Even without taking into account the very large but statistically unknown production of China, 94 % of the world's total in the quinquennium ending 1931-1932 was produced by the countries of monsoon Asia. Similarly, all but a relatively small proportion of the rice entering into international trade also originates in monsoon Asia, the principal surplus-producing countries being Burma (principally Lower Burma) French Indo-China (principally Cochin-China), Siam (almost entirely the five inner circles), Korea and Formosa. Since the two last-named countries supply principally Japan and form with that country practically an economic unit, the supply situation on the world market depends principally on the crops of Burma, French Indo-China and Siam.

#### THE SITUATION IN THE THREE GREAT SURPLUS PRODUCING COUNTRIES

Despite the continuance of low prices there was in the past season a recovery in the area under padi in Burma, though the maximum of 1930-31 was not regained. Production, which in the past decade has, with the exception of 1931-32, when a reduction in area coincided with a weak monsoon, fluctuated only slightly about the level of 12,000 million pounds, increased by 17 % in the past season.

The increase in area in the past season took place particularly in Lower Burma, from which the bulk of the export is derived. Production in 1932-33 increased, thanks to the increase in area and to favourable weather, and the final estimate of the surplus available for export (that is, the exports in the year beginning in the middle of last December) showed an increase of 28 % on the very small figure of the previous season. As total exports in 1932 amounted to 6,326 million pounds while the final estimate of the export surplus from the 1931-32 crop was only 6,048 million pounds, there was presumably no carryover at the beginning of the present export season and domestic stocks were probably greatly reduced in 1932, so that the surplus estimated for the current year may be taken as a maximum : in any case, actual exports during the past ten years have been more often than not smaller than the surpluses as finally estimated.

Exports (mainly of milled rice) from Rangoon to foreign ports and to Indian ports, which together normally make up about three-quarters of the total export of Burma, in the period from 1 January 1933, a date only fifteen days after

the beginning of the season, to 27 May 1933 were respectively 1,535 million and 787 million pounds (against 1,970 million and 393 million in 1932), in all 2,322 million against 2,363 million pounds.

*Production and net export of major exporting countries.*

(million pounds rice and rice derivatives).

Year	Production			Year	Net export			
	Burma	French Indo-China	Siam		Burma to foreign countries	(1) to Indian ports	French Indo-China	Siam (2)
1932-33 .	12,142	(3) 8,364	(4) 8,120	1933 .	...	...	...	...
1931-32 .	10,351	9,034	6,781	1932 .	4,219	2,107	2,624	3,379
1930-31 .	12,724	9,624	8,044	1931 .	4,323	3,177	2,101	2,683
1929-30 .	12,335	9,557	6,458	1930 .	5,187	2,015	2,465	2,315
1928-29 .	12,108	9,250	6,470	1929 .	3,930	2,269	3,229	2,625
1927-28 .	12,088	10,333	7,607	1928 .	3,379	2,856	3,904	3,500
1926-27 .	12,647	9,561	8,710	1927 .	4,383	2,414	3,630	3,708
1925-26 .	11,734	9,440	6,989	1926 .	4,621	1,457	3,506	2,780
1924-25 .	12,536	9,241	8,236	1925 .	4,805	2,754	3,277	2,947
1923-24 .	10,309	8,334	7,332	1924 .	4,138	1,042	2,646	2,278

(1) The official data are for rice both in the husk and not in the husk but, as practically all the rice exported is milled, they have been taken to represent milled rice and derivatives. — (2) Exports from Bangkok, which make up 98 % of the value of the total rice exports from Siam. Data refer to the season from 1 December to 30 November. — (3) Not including Cambodia. — (4) Provisional estimate.

Production in French Indo-China has fluctuated in the last decade between 9,000 and 10,000 million pounds. The export originates mainly in Cochin-China, which produces about one-third of the total. Rather less favourable conditions during the period of transplanting outweighed the increase in area in this region. The export surplus from the past crop is considered to be smaller than that from the 1931-32 crop; the most recent estimate places the surplus for export from Saigon during the present year at 2,464 million pounds, 291 million smaller than in 1932. Actual exports in the first three months of 1933 showed an increase of 13 % on those in the corresponding period of 1932.

*Production in French Indo-China.*

(million pounds rice and derivatives).

Year	Cochin-China	Cambodia	Tonkin	Annam	Laoe
1932-33 . . . . .	3,207	...	2,892	1,642	563
1931-32 . . . . .	3,636	781	2,903	1,183	531
1930-31 . . . . .	2,985	1,446	3,220	1,442	531
1929-30 . . . . .	3,484	1,047	2,990	1,505	531
1928-29 . . . . .	3,405	976	2,849	1,473	547
1927-28 . . . . .	3,876	1,273	3,013	1,543	628
1926-27 . . . . .	3,405	1,448	2,211	1,918	579
1925-26 . . . . .	3,240	1,179	2,923	1,535	563
1924-25 . . . . .	3,565	902	2,521	1,770	483
1923-24 . . . . .	3,314	927	1,801	1,646	644

In Siam, as in Burma and, to a much less extent, in French Indo-China, there was an increase in the area of rice harvested in the past season, amounting in this case to 8.5 %. Production increased more than proportionately, namely by 20 %. The final estimate of the exportable surplus is 3,942 million pounds, which is over double the small export surplus of the previous season. Actual exports from Bangkok in the first four months of the export season were larger than those in the corresponding period of the last season.

#### THE SITUATION IN THE MINOR EXPORTING COUNTRIES.

While their total production is relatively insignificant as compared with that of the great Asiatic producers, certain of the minor producing countries have special importance on the European and other markets where a demand for high-quality rices exists.

Amongst these producers of high-quality rices the most important are the United States, Italy and Spain.

There was a pronounced fall in production in the United States in 1932-33 and a slight fall in Italy, but in Spain production rose almost to the 1926 maximum. In the last-named country the increase in production, amounting to 19.5 % with respect to 1931, was due in part to increase in area, which amounted to 8.6 %, but still more to favourable growing conditions. In the United States there was a general reduction in area and in the three Southern States (Louisiana, Texas and Arkansas) unfavourable weather also played a part in reducing production to a figure 14.5 %, below that of 1931 and 9.0 %, below the average for 1926-30. In Italy a reduction in area under the crop was outweighed by conditions on the whole favourable to growth.

Amongst other minor producers of relative importance Egypt had in the past season a production much above the five year average, thanks to the abundance of irrigation water, which enabled the Government to authorize an area under the crop over seven times the greatly reduced area of the previous year.

#### *Production and net export of minor producing countries.*

(million pounds rice and derivatives).

Year	Production			Year	Net export		
	Italy	Spain	U. S. A.		Italy	Spain	U. S. A. (1)
1932 . . . . .	1,957	491	1,240	1933 . . . . .	...	...	...
1931 . . . . .	1,066	411	1,449	1932 . . . . .	335	87	270
1930 . . . . .	1,084	482	1,415	1931 . . . . .	327	83	237
1929 . . . . .	1,016	452	1,279	1930 . . . . .	456	125	252
1928 . . . . .	1,120	448	1,368	1929 . . . . .	379	86	376
1927 . . . . .	1,094	478	1,410	1928 . . . . .	413	131	286
1926 . . . . .	1,013	494	1,338	1927 . . . . .	561	118	251
1925 . . . . .	951	472	1,047	1926 . . . . .	430	142	(2) 60
1924 . . . . .	838	456	1,015	1925 . . . . .	333	99	68
1923 . . . . .	747	374	1,062	1924 . . . . .	387	116	165

(1) August-July. — (2) Net import.

Exports from Italy, which in 1932 showed a decline of 3 % for milled rice and of 11 % for brown rice, declined further in the first quarter of 1933 with respect to the same period of last year by 56 % and 35 % respectively. Exports of rough rice, on the other hand, increased about 8 ½ times in 1932 and over three times in the first quarter of 1933. In Argentina, which is the most important foreign market for Italian rice, there is reported to have been a great increase in the area harvested. Exports of milled rice from Spain increased by 4 % in 1932, the decrease in takings of the United Kingdom and Cuba, the two leading markets, having been outweighed by the increase in those of France and certain other countries. Exports of milled rice from the United States, which go principally to the United Kingdom and Germany, declined by 27 % in the first quarter of 1933 with respect to the corresponding period of 1932.

The relatively large export from Egypt in 1932 in comparison with previous years, which may be expected to be repeated this year, irrigation water in that country being again abundant, will accentuate competition in the Levant and the Balkan countries.

Exports from Brazil, the principal South American country with a surplus, which are directed chiefly to Argentina, Uruguay and Germany, were in 1932 less than one-third of the record figure of 1931; in the first three months of 1933 they were 88 % below the figure for the corresponding period last year. British Guiana, which has a growing export surplus, is finding difficulty in its principal market, the British West Indies, owing to the competition of Burma rice.

#### CONDITIONS IN THE PRINCIPAL RICE-IMPORTING COUNTRIES.

Production in India (excluding Burma), which is the world's greatest producer of rice with the possible exception of China, for which no reliable data are available, fluctuates very markedly, depending on the character of the monsoon. In 1931-32 production attained the maximum of 71,262 million pounds rice and derivatives, area having been increased by 2.6 % and rainfall having in that year been unusually favourable over the greater part of the area. In 1932-33, however, there was a reduction of 3.3% in area and rainfall was not so uniformly satisfactory. In Bihar and Orissa, which is normally second to Bengal amongst the provinces of India as a producer, the decline in production was no less than 26.8 % below the level reached in the previous season. The deficit regions of India as a whole derive the bulk of their supplies from Burma. The relative shortage in India this year is reflected in the fact that coastwise imports from Burma up to 27 May amounted to 787 million pounds against 393 million up to the corresponding date in 1932.

As regards China, information is as usual somewhat vague; it is reported that the 1932-33 crop was above average and probably about the same high level as that of 1930. In this case it may be expected that imports in 1933 will fall from last year's high figure to the low level of 1931. In fact, imports in the first quarter of 1933 were 25 % smaller than those in the corresponding period of 1932.

*Production in certain provinces of India.*

(million pounds rice and derivatives).

Year	All-India excluding Burma (1)	Bengal	Bihar and Orissa	Madras
1932-33 . . . . .	63,699	23,063	10,393	12,957
1931-32 . . . . .	71,262	23,483	14,198	13,322
1930-31 . . . . .	66,935	22,775	13,890	13,300
1929-30 . . . . .	64,686	20,292	14,872	13,001
1928-29 . . . . .	67,420	23,958	13,825	12,857
1927-28 . . . . .	57,764	16,064	10,832	12,576
1926-27 . . . . .	60,782	18,196	11,846	11,732
1925-26 . . . . .	64,311	20,331	12,095	13,167
1924-25 . . . . .	64,337	19,078	14,902	12,143
1923-24 . . . . .	59,453	18,587	12,118	11,210

(1) The all-India statistics exclude the production of the Punjab, the North-West Frontier Province, Ajmer-Marwara, Manipur Pargana and certain other Indian States, which together produced 2,602 million pounds on the average of the five years ending 1930-31; they also exclude the production of the feudatory states of Bihar and Orissa, for which no reliable data are available.

Amongst the importing countries of the second rank, the Netherlands East Indies have in the past five years taken the first place. Imports into Java and Madura fluctuate considerably from year to year, depending on the size of the domestic crop; production in 1932-33 was larger than that of the previous year and than the average of the five years ending 1930-31. For the Outer Provinces data of production are not available but it is known that, owing to the concentration of the natives on export crops and to the rapid increase of population, comparatively few areas have normally a surplus. Imports into these provinces are larger and more uniform than those into Java and Madura. In the first quarter of this year imports into Java and Madura showed a decrease of 19 % with respect to those in the same period of 1932; those into the Outer Provinces during the same period were practically the same as last year, there being an increase of 0.4 %. Import into the Netherlands East Indies has been prohibited for the period from 21 March 1933 to 21 July 1933. This embargo will affect particularly Burma, the chief source of imports, but is also a serious blow to the export trade from Siam and Cochin-China. Rice may, however, be imported into the Sumatra East Coast and Celebes by licence, should these provinces require such imports.

In British Malaya acute distress in the rubber and tin industries still dominates the situation in the peninsula. This has not only greatly reduced the purchasing-power in the country, both by a general lowering of the standard of living and by leading to the return to India of much immigrant labour, but has also led to an increase in the area under rice; not only is there the stimulus to many who formerly earned a living from employment in the major exporting industries to engage in rice cultivation but serious efforts are being made by the Government to encourage rice-growing with a view to lessening dependence on export crops and assuring

a domestic supply of foodstuffs. Yields in the past season were very satisfactory in several States and the crop was generally well above the average. Imports, which have shown a downward tendency in the past two years, were 11 % smaller in the first quarter of this year than in the corresponding period of 1932. The decline in imports of Burma rice, which is preferred by the immigrant Indian population, was proportionately greater. The falling off in this market affects principally, however, Siam rices, which take the first place in imports, largely owing to the taste of the Chinese population.

*Net imports into the principal Asiatic countries of deficit  
other than India proper and Japan.*

(million pounds rice and derivatives).

Year	China	Netherlands East Indies	British Malaya	Ceylon
1932 . . . . .	2,992	(1) 899	921	1,024
1931 . . . . .	1,427	1,303	1,156	1,006
1930 . . . . .	2,647	1,357	1,329	1,064
1929 . . . . .	1,439	1,592	1,256	1,102
1928 . . . . .	1,683	1,257	1,177	1,093
1927 . . . . .	2,799	1,003	1,228	1,053
1926 . . . . .	2,489	1,292	1,068	1,033
1925 . . . . .	1,679	1,109	907	972
1924 . . . . .	1,759	906	880	884

(1) Not taking into account the relatively small export from the Outer Provinces.

In Ceylon, as in British Malaya, reduced employment on the plantations with consequent lower purchasing-power and stimulus to local rice production, has resulted in the last two or three years in a decline in rice imports. In the first four months of 1933 the decline in the total with respect to the corresponding period of last year was 14 %. This reduction has been felt less severely by Burma, the principal source of imports, than by Siam and Cochin-China, the quantities originating in the latter two countries being, however, small in comparison with those from India proper.

*Sources of supply of Japan.*

(million pounds rice and derivatives).

Production				Net import of Japan			
Year	Japan	Korea	Formosa (first crop)	Year	From foreign countries	From Korea	From Formosa
1932-33. . . . .	19,020	5,079	1,322	1933. . . . .	...	...	...
1931-32. . . . .	17,346	4,999	1,143	1932. . . . .	253	1,960	...
1930-31. . . . .	21,063	6,041	1,094	1931. . . . .	(1)-91	2,385	723
1929-30. . . . .	18,758	4,305	896	1930. . . . .	287	1,318	497
1928-29. . . . .	18,945	4,245	1,004	1929 . . . . .	384	1,439	521
1927-28. . . . .	19,510	5,435	1,022	1928. . . . .	474	1,816	567
1926-27. . . . .	17,465	4,807	892	1927. . . . .	1,278	1,440	642
1925-26. . . . .	18,804	4,641	997	1926. . . . .	748	1,459	578
1924-25. . . . .	17,961	4,163	939	1925. . . . .	1,671	984	567
1923-24. . . . .	17,463	4,779	819	1924 . . . . .	1,073	1,132	...

(1) Net export.

Japan rivals India proper in the quantity of its imports but, as it derives less than one-fifth of its total imports from foreign countries – the remainder being taken from its dependencies, Korea and Formosa – its importance on the world market is very small compared with that of India, China, British Malaya, Ceylon and the Netherlands East Indies.

Imports into Japan fluctuate within wide limits and generally inversely to domestic production. In recent years, as production in Korea and Formosa has increased, imports from foreign countries have been reduced. Production in the past season was 9.4 % above that of last year and slightly below the five-year average. Korea, which is the principal source of rice imports, slightly increased its production despite a decrease in area, while in Formosa the first crop, which is that exported to Japan, was a very large one, thanks partly to increased area but mainly to favourable weather and to the energetic measures taken by the Government on behalf of rice-growing. Total production in Japan and its dependencies was almost exactly halfway between the very small figure of the previous season and the record high figure of 1930-31. Stocks are reported to be larger than last year. Government control over the rice trade has been strengthened. Taking all these considerations together it may be expected that imports from foreign countries will this year show a further decline. In fact, while gross exports were 2% larger in the first three months of the year than those in the corresponding period of 1932, net imports were 20 % smaller. Thanks to treaty obligations Siam and the United States are the only foreign countries to retain any considerable share in the import into Japan; the imports from the former are by far the greater of the two and are mainly composed of broken rice.

#### THE PRINCIPAL EUROPEAN IMPORTING COUNTRIES.

European imports make up roughly one-fifth of the total international trade in rice. By far the greater part of this rice is worked up in the European mills and much of it is reexported, generally after milling.

Germany, the largest European importer, takes milled rice and unmilled rice in relative proportions varying from year to year, both principally from Burma. In 1932 the imports of unmilled rice, in that year the larger of the two, showed a decline of 4 %, while those of milled rice declined by 9 %; exports of milled rice, which are very widely distributed, declined by 24%, a still greater decline than that of the previous year. In the first four months of 1933 there was a decrease of 6% in imports of unmilled rice and an increase of 11 % in those of milled rice with respect to the corresponding period of last year.

The new import duties and Monopoly surcharges that came into force last December together constitute a serious blow to the rice import trade. The reduction in the rate of drawback on the customs duty on husked rice imported into Poland for working up may also be mentioned in this connection.

France imports mainly milled rice. In 1932 its imports of whole milled rice, flour and semolina, chiefly from French Indo-China, increased by 33% and those of broken rice by 13 % while those of rough rice, mainly from Italy, decreased by 10 %. In the first quarter of 1933 the total imports increased by 24 %;

a large increase in those from the colonies outweighing a decrease of 30 % in imports from foreign countries.

The Netherlands import of rough rice, which is mainly from Burma and Japan, decreased in 1932 by 51 %, while that of milled rice decreased by 47 %. Exports, which are very widely distributed, decreased by 10 % in the case of rough rice, which goes mainly to Germany, and by 22 % in that of milled rice, which is sent chiefly to Germany and the United Kingdom. In the first four months of 1933 imports of rough rice increased by 72 % while those of milled, including broken, increased by 5 %.

Imports into the United Kingdom are almost entirely of milled rice, chiefly from Burma, Spain and the United States. That from Burma is generally remilled, however; there is a large import of broken from this source. In 1932 there was a further increase of 2 % in the total imports, those from British India (mainly Burma), increased by 13 % but those from Spain and the United States decreased by 9 % and 12 % respectively. In the first five months of 1933 there was a decrease of 12 % in the total imports, of 64 % in those from the United States and of 96 % in those from Spain, while those from British India increased by 32 %. The great falling off in foreign imports in the current year is due to the coming into force on 1 January 1933 of a duty of 1 d. per lb. on foreign whole milled and cargo rice. Only the superior quality of certain foreign rices enables them to retain part of the market.

#### THE GENERAL OUTLOOK.

World production appears to have undergone a further decrease in 1932-33. The variation with respect to the previous year in the individual regions of production has, however, been in general the reverse of that in 1931-32. Production in 1932-33 in the three major exporting countries, Burma, French Indo-China and Siam, taken together increased, due mainly to the fact that weather during the season was on the whole more favourable in these countries than in 1931-32, when climatic conditions were bad.

In Japan and its dependencies production also increased, mainly as a consequence in Japan and Korea, too, of a reversal of climatic conditions with respect to those of 1931-32; in China also the bad climatic conditions of 1931-32 appear to have been succeeded in the past season by unusually favourable conditions. In India proper, on the other hand, the rainfall conditions were unsatisfactory in several important areas so that the heavy crop of 1931-32 was followed by a deficitary crop in 1932-33. In Java and probably in other importing countries of the second rank there were larger crops due in great part to increase in area under the influence of the depression in export crops and the efforts of the Governments concerned to stimulate domestic food production.

Amongst the major exporting countries only Burma, therefore, with its strong position in the Indian market, finds itself this year in a more favourable situation. Its new preferential advantage in the United Kingdom is largely offset by a deterioration of the position in continental markets. In China and the Far Eastern market generally the position has, from the point of view of the



exporting countries, seriously deteriorated; given the above-mentioned position of Burma, however, this will react most severely on French Indo-China and Siam, which normally, and especially in the latter case, market the great bulk of their surplus in the Far East.

As regards the trade in high-quality rices the general conditions of depression in purchasing-power and of increased taxes on the product in European markets lead to the expectation of still more acute competition amongst exporters of these qualities.

C. J. ROBERTSON.

\* \* \*

*Bulgaria* : The area sown this year is 16,600 acres against 13,300 in 1932 and 18,400 on the average of 1927-31, an increase of 24.1 % on the figure for 1932 and a decrease of 10.1 % on the average. Unfavourable weather in May, particularly cold, retarded development. Crop condition on 1 June was 100 (according to the system of the Institute) against 95 on the same date last year.

### Rice.

COUNTRIES	AREA					PRODUCTION OF ROUGH RICE							
	1932/33	1931/32	Average 1926/27 to 1930/31	% 1932/33		1932/33	1931/32	Average 1926/27 to 1930/31	1932/33	1931/32	Average 1926/27 to 1930/31	% 1932/33	
				1931/ 1932	Aver- age							1931/ 1932	Aver- age
1,000 acres			= 100	= 100	1,000 centals			1,000 bushels of 45 lb.			= 100	= 100	
Bulgaria . .	13	17	18	77.8	72.8	304	307	350	675	683	777	98.8	86.8
Spain . . .	123	113	121	108.6	101.7	7,016	5,869	6,782	15,591	13,042	15,071	119.5	103.4
Italy 1) . .	335	359	350	93.2	95.6	14,476	14,598	14,689	32,169	32,440	32,642	99.2	98.6
Yugoslavia .	5	4	4	142.2	143.0	70	44	45	155	98	99	157.1	155.7
United Stat.	869	978	963	88.9	90.3	17,710	20,705	19,458	39,356	46,012	43,240	85.5	91.0
Korea . . .	3,824	4,104	3,922	93.2	97.5	64,297	63,283	62,987	142,879	140,625	139,967	101.6	102.1
Formosa { a)	700	678	628	103.3	111.5	16,731	14,466	12,455	37,180	32,146	27,678	115.7	134.3
{ b)	...	888	815	—	—	19,229	15,355	14,464	42,731	34,121	32,143	125.2	132.9
India . . .	82,026	84,260	80,839	97.3	101.5	1,057,478	1,137,958	1,058,099	2,349,905	2,528,744	2,351,285	92.9	99.9
Indo-China:													
Annam { c)	946	877	1,085	107.9	87.1	7,716	5,472	9,186	17,147	12,160	20,413	141.0	84.0
{ d)	1,409	1,411	1,464	99.8	96.2	14,771	10,737	12,408	32,824	23,859	27,573	137.6	119.0
Cochin-China	5,066	4,900	5,161	103.4	98.1	44,754	49,825	46,998	99,451	110,719	104,439	89.8	95.2
Laos . . .	1,137	1,161	1,118	97.9	101.7	7,716	7,275	7,716	17,147	16,167	17,147	106.1	100.0
Tonkin:													
V month .	1,181	1,184	1,293	99.8	91.4	13,089	13,147	15,882	29,086	29,215	35,292	99.6	82.4
X month .	2,041	2,019	1,905	101.1	107.1	26,522	26,616	23,293	58,936	59,147	51,762	99.6	113.9
Japan . . .	7,983	7,962	7,829	100.3	102.0	240,764	220,133	242,738	535,020	489,174	539,406	109.4	99.2
Java and { e)	8,053	7,596	7,496	106.0	107.4	109,807	107,188	106,961	244,011	238,192	237,687	102.4	102.7
Madura { f)	1,052	1,086	1,127	96.9	93.3	9,099	8,796	9,601	20,220	19,547	21,336	103.4	94.8
Siam . . .	6,919	6,378	6,464	108.5	107.0	108,269	90,414	99,439	240,593	200,915	220,972	119.7	108.9
Turkey . .	53	50 2)	43	107.3	122.8	1,025	827 2)	516	2,277	1,839 2)	1,146	123.8	198.7
Egypt . . .	489	67	325	726.2	150.7	12,135	1,585	8,970	26,966	3,522	19,933	765.7	135.3
TOTALS . .	125,112	126,092	122,970	99.2	101.7	1,792,978	1,814,600	1,773,037	3,984,319	4,032,367	3,940,008	98.8	101.1

§) In calculating the totals account has been taken of the probable area cultivated in some countries for which estimates of production but not those of area are available. — a) First crop. — b) Second crop. — c) First semester. — d) Second semester — e) Irrigated rice. — f) Unirrigated rice. — 1) The figures for 1932 and 1931 have been calculated taking into account the results of the new agricultural survey. — 2) Average 1927-30.

*India* : By the end of May the monsoon rains had become general. In Burma the monsoon was strong in June.

In Bengal sowing was reported to be advanced in the east and parts of the north by the middle of May ; preparatory tilling was carried out under good conditions. In Bihar and Orissa harvesting and threshing of winter padi was being carried out in the latter part of May and June. In Bombay heavy rains in the early part of June hindered sowing.

*Egypt* : Climatic conditions during May were favourable to rice germination and growth. Extensive areas have been cultivated and preparation and sowings are a fortnight earlier than last year, owing to the exceptionally high level of the Nile and consequent early announcement by the Government of the districts where rice cultivation is permissible.

## POTATOES

*Germany* : Main crop varieties had at the beginning of June sprouted to any great extent only in the milder regions.

*Austria* : Potatoes are often sparse as a consequence of those that were planted not having in every case been quite mature. In some places hoeing of early varieties had been begun ; main crop varieties are very backward.

### Potatoes.

COUNTRIES	AREA					CROP CONDITION (†)														
	1933	1932	Average 1927 to 1931	% 1933		1-VI-1933									I-V-1933			I-VI-1932		
				1932 = 100	Aver. = 100															
Thousand acres																				
						a)	b)	c)	a)	b)	c)	a)	b)	c)	a)	b)	c)			
Germany. . . (s)	...	624	593	...	...	2.8	—	—	—	—	—	—	—	—	2.7	—	—			
... (t)	...	6,490	6,388	...	...	2.8	—	—	—	—	—	—	—	—	2.9	—	—			
Austria . . .	...	511	467	...	...	2.5	—	—	—	—	—	—	—	—	2.4	—	—			
Bulgaria . . .	38	37	29	103.3	133.2	150	—	—	—	—	—	150	—	—	—	—	—			
Scotland . . .	...	149	137	...	...	102	—	—	—	—	—	—	—	—	—	—	95			
Luxemburg . . .	41	40	40	102.5	100.3	2.5	—	—	—	—	—	—	—	—	2.6	—	—			
Netherlands . . .	379	435	425	87.1	89.3	—	1) 68	—	—	—	—	—	—	—	—	1) 65	—			
Poland . . .	...	6,709	6,410	...	...	—	—	2.8	—	—	—	—	—	—	3.3	—	—			
Switzerland . . .	...	115	116	...	...	—	—	98	—	—	—	—	—	—	—	—	98			
Czechoslovakia . .	1,835	1,811	1,774	101.3	103.4	2.9	—	—	—	—	—	—	—	—	2.6	—	—			

†) For the explanation of signs and figures indicating crop condition, see cereals table and note on page 363. —  
s) Early potatoes. — t) Late potatoes. — 1) Middle of the month.

*Belgium* : Early and mid-early varieties have been lifted. The crop has generally a good appearance.

*France* : Potato crops are in satisfactory condition but attacks of *doryphora* are increasing in severity. A fairly good crop is expected.

*Great Britain and Northern Ireland* : Area in England and Wales will be about the same as in 1932. Earlies and second earlies have done well and have been lifted, yields being satisfactory. The main crop was generally planted under excellent conditions and the plants are regular and healthy. After the warm and dry conditions of May further rain was needed.

*Hungary* : At the end of the first week of June development was satisfactory though the crop had need of higher temperatures. Flowering of earlies had begun and earthing up was in progress.

*Italy* : Growth is fairly good.

*Switzerland* : The storms in May somewhat retarded development ; no serious damage has so far, however, been reported.

*Czechoslovakia* : Cold and lack of moisture have affected the plants and in the lower districts they are only sprouting. Earthing-up of late varieties is proceeding while that of earlies has already been completed in the districts with favourable climatic conditions.

## SUGAR

During the month of May and the early part of June the weather in most of the European countries that produce sugar-beet, after the almost summer heat there had been for some time in April, was very variable, but wet and rather cold days prevailed in general, especially toward the middle of May. During the second half of May weather conditions improved, the temperature rose, remaining, however, in general, still a little below the normal, and the rains diminished but did not cease. During the first fortnight of June, there were again abundant rains, cold days, some storms and hail.

However, although weather conditions were not always satisfactory the condition of the sugar-beet crop improved as compared with what it was at the beginning of May. Growth is a little behind in some regions, in others it is a little irregular, in others again insects have caused some damage, but, in general, the plants are vigorous and growth has been uniform, since there have been no hot days and the rains, though more abundant than was desirable, have removed all anxiety regarding the damage which began to be noted at the end of April on account of the drought.

Amongst the most important European countries that produce sugar, Germany has had rather unfavourable weather conditions, Czechoslovakia and Poland still less favourable conditions, though in none of these countries has the damage been serious.

In Germany weather conditions were very variable, with violent winds, cold, storms, particularly in the Valley of the Elbe, and frequent hail. The variations in temperature as between day and night were rather wide. In general the crop suffered from too low temperatures and from moisture, but the fine weather which eventually came gives hope of good yields.

In Czechoslovakia, the cold continued until the beginning of June and there were abundant rains. The low temperature a little hindered growth and the rains rendered field-work difficult and, on the other hand, encouraged the invasion of weeds and noxious insects.

In Poland, during the month of May, owing to the cold and the irregular rains, the young sugar-beet plants developed late and not very uniformly. In some regions in which the weather was dry and in others in which, on the other

hand, parasites caused damage to the young plants, it was necessary partially to re-sow. When the temperature again rose, the vegetation profited by the rise, but it still remains about ten days behind.

*Acreage of sugar-beet.*

COUNTRIES	1933 *)	1932	Average 1927 to 1931	% 1933	
				1932 = 100	Average = 100
	acres				
Germany. . . . .	680,758	541,025	1,014,242	126	67
Austria . . . . .	109,000	105,500	80,693	103	135
Belgium . . . . .	129,700	132,109	148,720	98	87
Bulgaria . . . . .	27,200	29,700	45,097	92	60
Denmark . . . . .	106,000	93,400	90,842	114	117
Spain . . . . .	200,000	201,488	185,230	98	107
Irish Free State . . . . .	13,600	13,686	13,351	99	102
Finland . . . . .	6,700	5,869	5,283	114	126
France . . . . .	598,000	617,200	644,485	97	93
Great Britain. . . . .	340,000	255,464	244,917	133	139
Hungary . . . . .	105,300	82,124	159,395	128	66
Italy . . . . .	196,000	207,334	267,555	95	73
Latvia . . . . .	32,000	21,323	7,191	151	45
Lithuania . . . . .	8,900	13,141	6,978	68	127
Netherlands . . . . .	110,900	98,999	141,020	112	79
Poland. . . . .	255,800	286,200	498,624	89	51
Rumania. . . . .	98,800	45,420	126,905	218	78
Sweden . . . . .	121,454	100,720	90,593	121	134
Switzerland . . . . .	4,000	3,500	3,390	114	117
Czechoslovakia . . . . .	358,400	360,601	594,327	99	60
Yugoslavia . . . . .	53,047	81,887	124,182	65	43
Total Europe a) . . .	3,555,559	3,296,690	4,493,020	108	79
U S. S. R. . . . .	3,000,000	3) 3,123,000	2,282,002	95	130
Total Europe b) . . .	6,555,559	6,419,690	6,775,022	102	96
Canada . . . . .	...	45,000	48,273	...	...
United States . . . . .	...	768,000	708,217	...	...
Total North America . . .	—	—	—	—	—
Japan . . . . .	22,151	24,076	23,567	92	94
Turkey . . . . .	53,708	37,383	21,642	149	257
Total Asia . . .	77,859	61,459	45,209	127	172
GENERAL TOTALS . . .	a) —	—	—	—	—
b) —	—	—	—	—	—

\*) Approximate data. — a) Not including U. S. S. R. — b) Including U. S. S. R. — x) Average 1929 to 1931. — a) Year 1931. — 3) Harvested area: sown area was 4,038,000 acres.

In other European countries, whether large or small producers of sugar, the sugar-beet crops are looking well, are vigorous and regular and, so far, give promise of good yields. No considerable damage by parasites has been reported.

As to the U. S. S. R. it appears that the area sown has reached the extent laid down by the plan; but hoeing has not proceeded with the necessary rapidity in view of the development already attained by the crops.

The changes now made in the table of areas sown are of no great importance and do not alter to any considerable extent the total figures published last month.

In the absence of reliable information we have left blank the area under sugar-beet in Canada and the United States. It is estimated that for Canada there will be this year an area approximately equal to that of last year, whilst for the United States there will be an increase of 20 to 25 per cent. However, as this information does not seem sufficiently certain for the moment, the corresponding figures are not published in the table concerning areas under sugar-beet.

If these estimates are confirmed, there will be this year for the world total an appreciable increase in the area under sugar-beet as compared with that of last year.

E. R.

\* \* \*

*Germany* : Crop condition varies greatly from one district to another.

*Austria* : The roots have suffered greatly from insects. At the beginning of June the first hoeing was in progress. Condition was then 2.6 against 2.9 at the same date last year.

*Belgium* : Due to the rains crop condition is better ; the eggs of beet fly have appeared early and are abundant and considerable damage is therefore expected ; to diminish its seriousness many growers are giving extra dressings of active nitrogenous fertilizers in place of sodium fluoride treatment. Thinning and singling were carried out under good conditions. The campaign against cassia and other weeds by means of chemicals has given good results.

*Bulgaria* : The frequent rains and hail in May favoured the spread of harmful insects and of diseases, which in some parts of the country caused appreciable losses. In addition to the appearance of harmful beetles, root-rot and fly have been reported.

*France* : The condition of the beet crop is generally average. Complaint is made of fly attack particularly in the North and North-East.

*Great Britain and Northern Ireland* : Seed has germinated satisfactorily and the plant is even and healthy. After the warm and dry weather of May further rain was needed at the end of the month.

*Hungary* : Development began very well but was checked by subsequent cold weather. Higher temperatures were wanted. At the end of the first week of June second hoeings were carried out.

*Poland* : The beginning of spring was characterized by dry and cold weather and it was only in April that conditions became relatively mild, though rather dry. The sowing of beet was carried out in the period from the middle of April to the middle of May. During May the temperature again fell and there were night frosts. In some regions there was reason to complain of excessive rain, while in others the dry weather continued. In some regions resowing was necessary.

During the second half of May, the cold and rainy weather retarded the development of the crop and only toward the end of the month fine and warm weather had a favourable influence on growth, which, is, however, about seven to ten days behind. Field-work in connection with the crop has also been delayed.



*U. S. S. R.* : On 30 May 2,267,000 acres had been sown in Ukraina, 100 % of that planned. Sowings were carried out appreciably in advance of those last year, when on 26 May only 56 % of the area had been sown, and the course of operations was similar to that in the favourable spring of 1930, when on 26 May 100 % of the area had been sown. In the other regions sowings were also practically completed by the end of the past month and it would appear that the figure of the plan (3,000,000 acres) has been attained.

Hoeing during the current year is proceeding under better conditions than a year ago and on 1 June the area hoed was 1,112,000 acres ; in Ukraina and the Central Chernozym region, however, hoeing should have been carried out more quickly, given the stage of growth reached by the crops.

In Ukraina *Cleonus* has been reported over about 902,000 acres. In a great many regions insufficiency of means for an energetic campaign against this insect is lamented.

*Barbados* : Harvesting was carried out rapidly in rather dry weather. Production was expected to attain at least 2,464,000 centals (123,200 short tons), including 2,029,000 centals (101,500 short tons) dark crystals, 74,000 centals (4,000 short tons) centrifugal sugar and 48,000 puncheons, equivalent to 358,000 centals (17,900 short tons) fancy molasses.

Despite the shortage of rain in the earlier part of the wet season, yields were high, thanks to the rapid development on the coming of the late rains.

*St. Kitts-Nevis* : Thanks to the comparatively high precipitation in 1932 the cane crop now being harvested is expected to be a record. The area harvested in St. Kitts this year is estimated at 7,600 acres, an increase of approximately 15 % on that harvested in 1932. Production is expected to be 4,480,000 centals (224,000 short tons) cane and 538,000 centals (27,000 short tons) sugar, in addition to that from canes received from Nevis. The crop would have been still larger but for the storm of 26 September, which, though only of moderate force in some areas uprooted advanced canes or checked growth.

*Trinidad* : In the latter half of April and the first half of May the fine weather with a few beneficial light showers greatly favoured harvesting while ensuring sufficient moisture for growing cane. Should the weather continue favourable until the end of June a bumper crop was expected. The rise in price of sugar has stimulated an increase in cane area.

*India* : In Bihar and Orissa crop condition was reported good on 5 June ; rains had occurred throughout the province.

*Egypt* : Climatic conditions during May were propitious to sugar-cane growth. Sowing on late season areas is finished and manuring, hoeing and irrigation are being carried out. The condition of germination and of growth is generally satisfactory and on 1 June was according to the system of the Institute average (100) as on 1 May 1933 and on 1 June 1932.

*Union of South Africa* : In April crop condition averaged 17 % below normal. The cane was seriously affected by the droughty conditions and rain was badly needed.

Production of cane sugar for the coming season will be about 7,460,000 centals (373,000 short tons) against 7,178,000 (359,000) in 1932-33 and 6,243,000 (312,000) on the average of the five seasons ending 1931-32. Percentages 104.0 and 119.0.

## VINES

*Germany* : Thanks to the relatively mild weather of the past winter vines have not generally suffered damage apart from some areas in Baden and Wurtemberg, where the lack of snow-cover led to frost losses.

May was moist and warm and favoured development of the young shoots so that the condition of the vines may everywhere be considered satisfactory.

*Austria* : Due to the cold rainy weather condition worsened in May. On 1 June it was 2.8 against 2.0 on 1 May 1933 and 1.8 on 1 June 1932.

*Bulgaria* : Owing to the frequent rains development has been slow. In the majority of districts, however, condition of the vines at the beginning of June was good or even very good.

*Spain* : Flowering has been very luxuriant and leads to hopes of a production above the normal.

Area in bearing this year is 3,541,200 acres, an increase of 0.4 % on that of last year (3,526,000 acres) and an increase of 1.7 % on the average of the five years ending 1931 (3,482,000 acres).

*France* : The weather has been generally favourable to the vines, which generally look well except where there were frosts at the beginning of spring and flowering is taking place in the best conditions. No complaints of shedding have been reported but in certain districts attacks by pyralis have been noted.

*Hungary* : At the end of the first week of June development was backward for the time of year.

*Italy* : The cold rainy weather has had some effect but no damage is reported and the vineyards, in which work is in full swing, are free from disease.

*Luxemburg* : At the beginning of June crop condition was 2.8 according to the system of the country against 3.2 on 1 May and 2.3 on 1 June 1932.

*Portugal* : The vines are in excellent condition and an abundant production is anticipated.

*Rumania* : In the first decade of June crop condition was satisfactory.

*Switzerland* : The frosts in April caused considerable losses. The storms favoured development of parasites. In various districts heavy insect infestation is reported. The fine weather at the end of May was very welcome and good progress was made by the crop.

The area planted this year is 32,900 acres, 99.3 % of that in the past year (33,100) and 99.5 % of the average for the five years ending 1931 (33,000).

Crop condition on 1 June was 66 (according to the system of the Institute) against 105 at the same date last year.

*Syria and Lebanon* : Shedding of flowers due to rain and severe cold is reported in Lebanon. Flowering varies from fairly good to excellent. Crop condition in May was good (100) as at the same date last year.



*Algeria* : The scirocco and the drought in the month of May did not seriously injure the growth of the vines. Flowering took place in fairly good conditions; shedding is, however, reported from many districts. Insects and cryptogamic diseases have not, so far, caused serious damage. The state of the crop on 1 June was average.

*Cyrenaica* : Flowering took place under good conditions. The usual hot winds of spring were almost completely absent this year.

*French Morocco* : The flowering of the vines took place in Fez at the beginning of May ; it is a little less forward in other regions, but it is generally abundant and has taken place in excellent conditions. The application of sulphur and of sulphate has been regularly carried out.

*Tunis* : Flowering took place under favourable conditions. Condition on 1 June was good (120 according to the system of the Institute).

## OLIVES

*Spain* : Fruit formation has been abundant and gives grounds for expecting a crop above the normal.

Area in bearing this year is 4,641,000 acres, a decrease of 1.7 % on that of last year (4,722,700 acres) and an increase of 4.2 % on the average of the five years ending 1931 (4,452,300 acres).

*Italy* : Growth is somewhat backward but generally satisfactory.

*Portugal* : The formation of the fruit has been excellent ; everything justifies the anticipation that an abundant production will be obtained

*Syria and Lebanon* : Flowering is very luxuriant in Lebanon and has been unaffected by the rains ; in the other mandated territories it varies from good to excellent. Crop condition in May was good (100) as at the same date last year.

*Algeria* : The scirocco has affected the flowering of the olive-trees. No serious damage is reported from insects and diseases. The state of the crop on 1 June was average.

*Cyrenaica* : Weather was favourable to flowering.

*French Morocco* : The olive trees are in flower in the regions of Oudja, Fez and Meknez. Flowering has taken place in excellent conditions but it is to be feared that the excessive temperature in certain districts may injure the formation of the fruit, particularly in the region of Meknez.

*Tunis* : Flowering took place under good conditions. Condition on 1 June was good (120 according to the system of the Institute).

## COTTON

*Bulgaria* : Official statistics show a heavy decrease in area sown. From 19,700 acres in 1932 there has been a fall to 7,900 acres, 40 % below the 1927-31 average.

The unfavourable weather in May caused very irregular development. Crop condition on 1 June was 130 against 150 at the same date last year.

*U. S. S. R.* : According to information of the People's Commissariat for Agriculture the first hoeing of cotton had on 31 May been carried out on 45.8 % of the area sown. Last year on the date mentioned the first hoeing had been carried out on a larger area.

*Argentina* : The cotton plantations benefited by the favourable weather prevailing during January and February but a drought then set in which caused some damage, especially to the second late crop. It is estimated that the production of unginned cotton amounts to from 1,984,000 centals (415,100 bales) to 2,205,000 centals (461,200 bales), 15-20 % lower than last year.

The damage done by locusts is very slight. There have been several invasions of cotton worms but, owing to the energetic defensive measures adopted by growers, this has not affected the yield very much, the reduction in the crop being due rather to the excessive dryness.

*United States* : Crop condition improved in the last week of May and, with generally favourable weather in the first half of June, the crop continued to make good progress.

*St. Kitts-Nevis* : Owing to the continued unsatisfactory condition of the market for Sea Island the area under cultivation in the Presidency has been reduced from 6,000 to 600 acres. The crops of all three islands were severely damaged by pink bollworm.

*St. Vincent* : Area under Sea Island cotton in 1932-33 is now estimated at 669 acres, as against 1,802 in 1931-32 and 3,946, the average for the quinquennium 1926-27 to 1930-31. Percentages : 37.2 and 17.0. Area under Marie Galante was the same as that of the previous season, 886 acres, as against 1,088 on the average (81.6 %).

During the quarter ending 31 March 1933 insect and fungoid pests of Sea Island cotton were normal. The percentage of stained cotton was expected to be small. At the end of May Sea Island cotton had been uprooted; there was every indication that the area under Sea Island cotton would not be increased during the coming season.

*India* : Toward the end of May the appearance of bollworm was reported in the Shakargarh and Gurudaspur districts of the Punjab.

*Algeria* : Cotton sowings were not maintained in 1932 except by some planters in the department of Oran. In 1932 only 470 acres were sown (of which 450 were in the department of Oran), as against 4,560 in 1931 and an average of 14,160 for the years 1926-30. Yield has fallen to 860 centals (180 bales) of ginned cotton as against 6,450 (1,350) in 1931, and 27,630 (5,780) on the average for the period 1926-30. It does not seem likely that cotton-growing will develop in Algeria as long as the prices obtained are not likely to be remunerative.

*Egypt* : During the second fortnight of May climatic conditions were somewhat unfavourable in Lower Egypt, especially North of the Delta, where the cotton crop is about a fortnight late, but favourable in Upper Egypt and the Fayum. The buds have started to form in the early crops in the South of the Delta and flowering has begun in some of the crops of Upper Egypt. In appearance the plant varies from good to satisfactory. The Nile level is above normal, irrigation is satisfactory and the volume of water has been adequate.

The third estimate of cotton yield for 1932, published on 5 June shows an increase of 15 % as compared with the second estimate published last December. The chief

increase is to be noted in the varieties *Sakellaridis*, *Maarad*, *Ashmuni* and *Zagora*, the more so that the figure for the other varieties namely those between  $1\frac{1}{4}$  and  $1\frac{3}{8}$  inches shows a certain falling off.

## FLAX

*Belgium* : The crop is somewhat irregular but its condition is on the whole satisfactory.

*Great Britain and Northern Ireland* : The crop made good progress during May and the brairds were at the end of the month generally thick and promising. Some damage was caused by "grub" but it appears to have been confined to a small area.

*Hungary* : At the end of the first week of June development was good and the plants were fairly strong. In places flowering had begun. Higher temperatures were desirable.

### Area and Crop Condition of Flax.

COUNTRIES	AREA SOWN					CROP CONDITION †)														
	1933	1932	Average 1927 to 1931	% 1933		r-VI-1933									r-V-1933			r-VI-1932		
				1932 = 100	Aver = 100															
1,000 acres							a)	b)	c)	a)	b)	c)	a)	b)	c)					
Austria . . . . .	...	8	10	...	...	2.6	—	—	—	—	—	—	2.6	—	—					
Bulgaria. . . . .	1	1	1	150.0	170.0	110	—	—	—	—	—	—	150	—	—					
Netherlands . . . .	12	5	33	235.7	34.9	160	—	—	—	—	—	—	166	—	—					
Czechoslovakia . .	17	16	40	103.9	42.0	—	—	—	—	—	—	—	—	—	—					
Canada . . . . .	384	454	489	84.6	78.5	—	—	—	—	—	—	—	—	—	—					
India . . . . .	3,239	3,301	2,123	98.1	103.7	—	—	—	—	—	—	—	—	—	—					

†) For the explanation of signs and figures indicating crop conditions, see cereals table and note on page 363. —  
1) Middle of month.

*Netherlands* : Due to drought the stems are too short. White-flowered flax, an improved variety from Friesland is being grown on an increasingly large scale and now covers 75 % to 95 % of the flax area in almost all districts ; only Groningen, with 35 %, being an exception.

*Czechoslovakia* : On 1 June crop condition varied considerably from district to district but was average for the country as a whole.

*India* : The final estimate for linseed gives an area of 3,239,000 acres, a decrease of 1.9 % on the corresponding estimate of 1931-32 and an increase of 3.7 % on that for the five years ending 1930-31. The estimate for production is 9,027,000 centals (16,120,000 bushels) against 9,318,000 (16,640,000) and 8,221,000 (14,680,000), there being thus a decrease of 3.1 % with respect to 1931-32 and an increase of 9.8 % on the five-year average.

## HEMP

*Bulgaria* : The increase of area in recent years has continued even in 1933, so that this year 16,100 acres have been sown against 11,100 in 1932 and 9,400 on the average of 1927-31 (percentages 144.3 and 170.1).

The frequent rains of May favoured development and crop condition on 1 June was 150.

*Hungary* : At the end of the first week of June the plants were strongly developed and fairly high. Higher temperatures were required.

*Czechoslovakia* : On 1 June crop condition varied considerably from one district to another and for the country as a whole was above average.

## HOPS

*Great Britain and Northern Ireland* : Bines are healthy and vigorous but further rain was needed at the end of May. Downy mildew has appeared in many gardens and there are also some reports of blight.

*Hungary* : At the end of the first week of June development was good but began to show the effects of the cold weather.

*Czechoslovakia* : Due to cold and persistent drought in the latter half of May growth was checked and only in some areas has attachment to the poles been possible. Where growth allows, the plants will soon be tied. On 1 June crop condition varied from average to above average.

## TOBACCO

*Bulgaria* : Following on the gradual reduction of area in the last three years the area this year (62,000 acres) exceeds that of 1932 by 31 % but remains 15 % below the 1927-31 average.

The frequent rains and hail during May were very unfavourable to development and crop condition on 1 June was 90 as at the same date last year. These weather conditions also retarded transplantation.

*Hungary* : At the end of the first week of June growth was good. Higher temperatures and in places moisture were necessary for future development.

*Italy* : Development was satisfactory.

*Algeria* : The cultivated area in 1933 is estimated at 47,000 acres as compared with 59,000 in 1932 (79 per cent.) and 61,000 on the average in the preceding five-year period. In May many tobacco plants were destroyed by the scirocco and were replaced. Growth is languishing and the development of the plants is not all that might be desired. On 1 June the state of the tobacco crop was average (quoted at 100 according to the system adopted by the Institute) as at the corresponding period of last year.

## OTHER PRODUCTS

### Cacao.

*Brazil* : Entries of cacao by rail in the Ilheos and Rio de Contas zones in May were as follows, the corresponding figures for last year being given for comparison.

	May 1933	May 1932
Ilheos zone (1000 lb.) . . . . .	411	146
Rio de Contas zone (1000 lb.) . . . . .	85	—

Transport of the new crop has begun. The forcercrop is reported to be probably smaller than last year.

Prospects for the main crop are considered satisfactory.

The weather during May was rather dry, especially in the latter part of the month. Rainfall at Ilheos was 82.5 mm. (3  $\frac{1}{4}$  inches) against the average of 199.39 mm. (7.85 inches).

*Trinidad* : The crop will be average. The fine weather in the latter half of April and the first half of May enabled harvesting and drying to be carried on without interruption. Some substitution of sugar-cane for cacao has taken place. The lack of cash has led to considerable neglect of the trees. Witchbroom has been partly checked by the strict measures of control.

### Tea.

*India* : In North India generally there was some useful rain but insufficient in South India a little rain fell in April but more was wanted to bring on the crop. Up to the end of April there was in North India a decrease of 3  $\frac{1}{2}$  million pounds as compared with the outturn to the same date last year; in South India outturn was 4.28 % behind the corresponding figure of 1932.

*Japan* : On 1 June condition was rather poor due to unfavourable weather.

### Groundnuts.

*Egypt* : Weather during May was favorable to the germination and growth of groundnuts. Soil preparation and cultivation are being continued and the state of germination and of growth is satisfactory.

### Colza and sesame.

*Austria* : Flowering of colza took place under good conditions and condition on 1 June was 2.3 against 2.4 on 1 May 1933 and 2.8 on 1 June 1932.

*Bulgaria* : The long and severe drought of last autumn hindered sowings of colza. According to official estimates the area this year is 4,400 acres, 182.0 % of the very small area of 1932 but only 12 % of the 1927-31 average. Information from private

sources indicates that only 1,320 acres have been sown. The abundant rains of May favoured the spread of diseases and harmful insects. All this leads to the expectation that this year's crop is insignificant.

The sesame area sown this year is estimated at 20,500 acres, almost the same as last year and 31 % above the 1927-31 average. Despite unfavourable conditions during May crop condition at the beginning of June was 150, as at the same date in 1932.

*Hungary* : At the end of the first week of June flowering of colza was generally over. Due to the cold weather the crop was in many places low and thin. An average production was expected.

*Poland* : On 15 May condition of colza according to the system of the country (3 = average ; 4 = good) was 3.3 for the winter variety and 3.0 for the summer variety, against 2.4 and 3.0 at the same date in 1932.

*India* : The final estimate for rapeseed and mustard gives an area of 6,052,000 acres, a decrease of 2.6 % on the corresponding estimate of 1931-32 and 3.3 % on the average of the five years ending 1930-31. The estimate for production is 23,453,000 centals against 22,960,000 and 21,661,000, the increase with respect to the latter figures being 2.1 % and 8.3 %.

## **Jute.**

*India* : By the middle of May sowing was advanced in the east and parts of the north of Bengal. In the first days of June it was continuing in Bihar and Orissa.

## **Sericulture.**

*Bulgaria* : Abundant rains, accompanied by hail and low temperatures have been unfavourable to leafing of the mulberries and have retarded rearing of the worms. In consequence appearance of the cocoons on the Bulgarian market is expected this year to be late.

*Italy* : In the first half of June weather was generally unfavourable due to rain and low temperatures and rearings suffered to some extent. Complaints of disease have been received but it is not of a serious nature. In the more forward districts cocoons have already been obtained but in the later and upland districts rearings are still only in the third or fourth stage.

*Japan* : At the beginning of June condition of mulberry was average and rearings were excellent. Weather was favourable.

Production of spring cocoons in 26 prefectures is reported to be 175,567,000 lb., a little above the corresponding figure of previous year.

*Syria and Lebanon* : The quantity of silkworms incubated is about 53,000 ounces against 60,800 in 1932 and an average of 96,800 in 1927-31 ; percentages 87.1 and 54.6. On 1 May rearings were good, as last year, and condition of mulberries was good (100) against average (80) on 1 May 1932.

## SUPPLEMENTARY FIGURES

As the production and area for most countries were published in the February number of the Monthly Crop Report and Agricultural Statistics, it is not necessary to repeat them again this month. Hence only the new data and any modifications of the figures published last month are given in continuation. In another table is shown the total world production based on the figures received up to the time of going to press.

COUNTRIES	AREA					PRODUCTION							
	1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33		1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33	1931 and 1931/32	Average 1926 to 1930 and 1926/27 to 1930/31	1932 and 1932/33	
				1931 and 1931/32	Aver. = 100							1931 and 1931/32	Aver. = 100
1932 and 1932/33	1931 and 1931/32	1926 to 1930/31	1931 and 1931/32 = 100	Aver. = 100	1932/33	1931/32	1926/27 to 1930/31	1932/33	1931/32	1926/27 to 1930/31	1931 and 1931/32 = 100	Aver. = 100	
WHEAT					1,000 centals			1,000 bushels					
Greece . . . . .	1,498	1,496	1,300	100.1	115.2	10,241	6,737	7,152	17,067	11,228	11,920	152.0	143.2
Algeria . . . . .	3,736	3,640	3,738	102.6	100.0	17,542	15,390	17,756	29,236	25,649	29,592	114.0	98.8
Chili . . . . .	1,570	1,517	1,635	103.5	96.1	15,653	12,712	16,597	26,088	21,187	27,661	123.1	94.3
Australia . . . . .	15,585	14,500	14,387	107.5	108.3	126,000	113,792	93,450	210,000	189,653	155,748	110.7	134.8
RYE													
Algeria . . . . .	3	3	4	94.6	86.5	15	20	27	27	37	49	72.5	54.7
BARLEY													
Estonia . . . . .	266	279	283	95.4	93.9	2,212	2,840	2,512	4,608	5,918	5,233	77.9	88.1
Greece . . . . .	533	550	472	96.9	112.9	4,263	3,430	3,333	8,882	7,146	6,945	124.3	127.9
Algeria . . . . .	3,339	3,178	3,500	105.1	95.4	14,833	12,993	16,887	39,902	27,069	35,181	114.2	87.8
OATS													
Greece . . . . .	331	344	279	96.4	118.7	2,189	1,688	1,595	6,842	5,274	4,985	129.7	137.2
Algeria . . . . .	488	577	605	87.5	80.7	2,786	2,628	4,169	8,707	8,212	13,028	106.0	66.8
POTATOES													
Algeria . . . . .	25	24	25	101.7	97.5	1,015	949	918	1,691	1,582	1,530	106.9	110.5
Un. of S. Africa .	—	—	—	—	—	2,608	3,454	2,886	4,347	5,757	4,810	75.5	90.4
VINES (WINE)													
						1,000 Imperial gallons			1,000 American gallons				
Greece . . . . .	352	315	283	111.5	124.5	83,911	42,793	56,283	100,769	51,391	67,591	196.1	149.1
COTTON (GINNED)													
						1,000 Centals			1,000 bales (478 lb. net)				
United States . .	35,939	38,705	42,219	92.9	85.1	62,150	81,719	70,907	13,002	17,096	14,834	76.0	87.6
Egypt . . . . .	1,135	1,747	1,861	65.0	61.0	4,799	6,297	7,649	1,004	1,317	1,600	76.2	62.7
Uganda . . . . .	1,070	866	641	123.6	166.9	1,112	780	634	233	163	133	142.5	175.4
A. E. Sudan . . .	325	336	299	96.7	108.6	573	1,007	593	120	211	124	56.9	96.6
Brazil . . . . .	1,610	—	1,353	—	119.0	1,662	2,663	2,389	348	557	500	62.4	69.5
Un. of S. Africa 1)	—	—	—	—	—	10	13	43	2	3	9	72.2	22.1
TOBACCO													
						1,000 pounds							
Algeria . . . . .	59	57	61	104.7	97.9	407	399	499	40,663	39,863	49,852	102.0	81.6

1) Including Swaziland.

## TOTALS OF WORLD AGRICULTURAL PRODUCTION

The following totals have been obtained from the data in the tables published for each product in January, which have been revised and completed. With the name of each product is indicated the number of countries for which data for 1932 are at present available and also the percentage of their total production in 1931 to world production in the same year as published in the 1931-32 Yearbook, when they comprised nearly all producing countries, except U. S. S. R.

Crop, number of countries comprised in the total, and percentages of world production	AREA						PRODUCTION							
				Percentages for 1932 and 1932-33			British weights			American weights			Percentages for 1932 and 1932-33	
	1932	1931	Average 1926 to 1930 and 1926-27 to 1930-31	1931 and 1932 = 100	Average = 100		1932	1931	Average 1926 to 1930 and 1926-27 to 1930-31	1932	1931	Average 1926 to 1930 and 1926-27 to 1930-31	1931 and 1932 = 100	Average = 100
	1932-33	1931-32	1930-31				1932-33	1931-32	1930-31	1932-33	1931-32	1930-31		
	thousand acres						thousand centals			thousand bushels				
Wheat (49 countr. 98 %) . . . . .	251,473	247,252	243,407	101.7	103.3		2,234,129	2,247,922	2,281,824	3,723,474	3,746,462	3,669,633	99.4	101.5
Rye (30 countries 99 %) . . . . .	46,928	47,035	47,964	99.8	97.8		561,929	468,431	525,396	1,003,448	836,486	938,210	120.0	107.0
Barley (43 countr. 90 %) . . . . .	64,125	62,731	61,617	102.2	104.1		714,441	619,516	678,457	1,488,445	1,290,682	1,413,477	115.3	105.3
Oats (38 countries 98 %) . . . . .	101,806	100,855	102,558	100.9	99.3		1,163,225	1,042,179	1,135,865	3,635,051	3,256,787	3,549,553	111.6	102.4
Maize (26 countries 86 %) . . . . .	165,497	163,033	154,331	101.5	107.2		2,327,796	2,094,369	2,067,329	4,156,779	3,739,951	3,691,664	111.1	112.6
Rice (rough) (17 countr. 93 %) . . . . .	125,112	126,092	122,970	99.2	101.7		1,792,978	1,814,600	1,773,037	3,984,319	4,032,367	3,940,008	98.8	101.1
Potatoes (35 countr. 96 %) . . . . .	31,499	31,178	30,034	101.0	104.9		3,440,559	3,279,998	3,035,548	5,734,150	5,466,554	5,059,146	104.9	113.3
Sugar-beet (21 c. 99 %) . . . . .	4,228	4,735	5,224	89.3	80.9		997,588	1,039,514	1,148,279	49,879	51,975	57,413	96.0	86.9
Cotton ginned (18 countr. 94 %) . . . . .	67,710	71,642	76,606	94.5	88.4		99,735	116,561	114,268	20,865	24,385	23,905	85.6	87.3
Linseed (18 countr. 94 %) . . . . .	11,807	14,762	13,818	80.0	85.4		47,810	68,540	66,547	85,375	122,393	118,834	69.8	71.8
Flax (fibre) (16 countr. 97 %) . . . . .	610	813	1,070	75.1	57.0		2,108	2,842	4,846	210,763	284,177	484,578	74.2	43.5
Hemp (fibre) (9 countr. 63 %) . . . . .	331	331	420	100.0	78.8		2,269	2,317	3,470	226,856	231,707	347,009	97.9	65.4
Tobacco (14 countries 50 %) . . . . .	2,162	2,946	2,723	73.4	79.4		16,610	23,962	21,775	1,660,968	2,396,212	2,177,513	69.3	76.3
Hops (8 c. 99 %) . . . . .	96	114	156	84.8	61.9		800	957	1,442	80,028	95,681	144,183	83.6	55.5
Olive oil (9 countr. 96 %) . . . . .	—	—	—	—	—		17,483	18,519	16,852	229,733	243,349	221,447	94.4	103.7
Vines (19 c. 96 %) . . . . .	—	—	—	—	—		3,556,234	3,552,890	3,254,977	4,270,717	4,266,702	3,908,935	100.1	109.3
Silk (8 c. 92 %) . . . . .	2	6,818	2	7,020	2	7,549	851,236	919,474	947,989	851,236	919,474	947,989	92.6	89.9

1) Wine. — 2) Eggs in incubation. — 3) Cocoons.



## FODDER CROPS

*Germany* : Development of fodder crops, meadows and pastures is backward as compared with that in preceding years so that dairy cattle have been put to pasture later than usual. Clover meadows and pastures are frequently thin.

*Austria* : At the beginning of June mangolds were very backward. Clover and alfalfa had a good appearance but were generally rather backward. Thanks to the rainy weather, condition of permanent meadow was improved with respect to the preceding month but its growth still left much to be desired. Pastures still offered little fodder. In the last week of May snow prevented utilization of alpine pastures.

*Belgium* : Meadows (clover, alfalfa and ordinary) renewed growth after the recent rains. Meadows for cutting are generally rather poor and yield is expected hardly to attain the normal.

*Bulgaria* : The areas sown to fodder crops are as follows, according to the first official estimate :

	1933 (acres)	1932	% 1933 1932 = 100
Mangels . . . . .	5,000	6,200	80.0
Fodder millet . . . . .	42,000	32,000	130.8
Temporary grass . . . . .	60,000	81,000	84.8
Permanent grass . . . . .	766,000	776,000	98.7
Vetches . . . . .	393,000	383,000	102.6

The frequent rains of May greatly favoured growth and condition of fodder crops on 1 June was very good.

*Irish Free State* : The weather was unsettled during the first half of the month of May ; during the remainder of the month it was generally fine and genial. Conditions were very favourable to the growth of all crops.

There were adequate supplies of feed on hand to meet all requirements.

Milk yields increased considerably during the month.

*France* : The weather as a whole has been favourable to natural and artificial meadows but the yields obtained at the first cut seem to have been light, particularly in the South-West. Haymaking is proceeding satisfactorily.

*Great Britain and Northern Ireland* : The early part of May was showery, with cold nights. Subsequently the weather was warm and dry though in Scotland sufficient rain fell to maintain pastures in luxuriant condition. Preparation of the land for root crops was continued under favourable conditions and good seed-beds were generally obtained. In England and Wales considerable areas intended for turnips and swedes remained to be sown but the work was more forward than usual and, where plants

*The Condition of Fodder Crops.*

CROPS AND COUNTRIES	CROP CONDITION †)								
	1 June 1933			1 May 1933			1 June 1932		
	a)	b)	c)	a)	b)	c)	a)	b)	c)
<b>CLOVER:</b>									
Germany . . . . .	2.8	—	—	2.8	—	—	2.6	—	—
Austria 1) . . . . .	2.3	—	—	2.5	—	—	2.8	—	—
Estonia . . . . .	109	—	—	—	—	—	—	100	—
Latvia . . . . .	—	100	—	—	—	—	—	—	—
Lithuania:									
annual . . . . .	3.7	—	—	—	—	—	3.8	—	—
biennial . . . . .	—	—	2.7	—	—	—	—	3.0	—
Netherlands:									
red clover . . . . .	—	—	2) 61	—	—	—	2) 68	—	—
white clover . . . . .	2) 70	—	—	—	—	—	2) 69	—	—
Poland . . . . .	2) 3.2	—	—	2) 3.1	—	—	—	—	2) 2.7
Canada 3) . . . . .	—	—	93	—	—	—	—	—	91
Egypt (berسيم). . . . .	—	100	—	—	100	—	101	—	—
<b>ALFALFA:</b>									
Germany . . . . .	2.9	—	—	2.7	—	—	2.6	—	—
Austria . . . . .	2.3	—	—	2.3	—	—	—	3.0	—
Canada . . . . .	—	—	98	—	—	—	—	—	97
<b>MANGOLDS:</b>									
Germany . . . . .	2.9	—	—	—	—	—	2.7	—	—
Austria . . . . .	2.6	—	—	—	—	—	2.8	—	—
Bulgaria . . . . .	130	—	—	—	—	—	130	—	—
<b>TEMPORARY MEADOWS:</b>									
Austria 4) . . . . .	2.6	—	—	2.5	—	—	2.6	—	—
Bulgaria . . . . .	110	—	—	—	—	—	110	—	—
Scotland . . . . .	—	100	—	—	—	—	—	100	—
Sweden . . . . .	—	3.0	—	—	—	—	3.4	—	—
Switzerland . . . . .	3.9	—	—	3.9	—	—	4.1	—	—
<b>PERMANENT MEADOWS:</b>									
Germany:									
irrigated meadows . . . . .	2.7	—	—	2.9	—	—	2.4	—	—
other meadows . . . . .	—	3.0	—	—	3.0	—	2.6	—	—
Austria . . . . .	2.5	—	—	2.4	—	—	2.7	—	—
Bulgaria . . . . .	125	—	—	—	—	—	135	—	—
Estonia . . . . .	117	—	—	—	—	—	—	—	—
Latvia . . . . .	—	100	—	—	—	—	—	—	95
Lithuania . . . . .	—	—	2.8	—	—	—	—	—	—
Netherlands 5) . . . . .	—	—	2) 59	—	—	—	2) 71	—	—
Poland:									
ordinary meadows . . . . .	—	—	2) 2.7	—	—	—	—	—	2) 2.6
low meadows . . . . .	—	—	2) 2.6	—	—	—	—	—	2) 2.6
meadows improved . . . . .	—	2) 3.0	—	—	—	—	2) 3.2	—	—
Switzerland . . . . .	3.6	—	—	3.8	—	—	4.1	—	—
<b>PASTURES:</b>									
Austria . . . . .	—	—	3.3	2.4	—	—	—	—	3.2
Scotland . . . . .	110	—	—	—	—	—	—	100	—
Netherlands . . . . .	—	—	2) 60	—	—	—	2) 71	—	—
Poland:									
permanent pastures . . . . .	—	—	2) 2.4	—	—	—	—	—	2) 2.5
temporary pastures . . . . .	—	—	2) 2.8	—	—	—	—	—	2) 2.8
Switzerland . . . . .	3.4	—	—	—	—	—	3.5	—	—
Canada . . . . .	—	—	93	—	—	—	—	—	91

a) Above the average. — b) Average. — c) Below the average. — †) See explanation of the various systems on page 363.  
 — 1) Red clover. — 2) At the middle of the preceding month. — 3) Clover and hay. — 4) Klee gras. — 5) Meadows for hay.

were showing, germination appeared satisfactory ; drilling of mangolds was practically completed and germination was regular and satisfactory. In Scotland the turnip crop suffered to a small extent from fly and some resowing was necessary. Seed grasses, though somewhat backward at the beginning of May made progress during the month and an average crop is indicated in England and Wales ; for meadow hay the yield may be on the light side in that country. Pastures were looking fairly well at the end of May in England and Wales and were generally sufficient for requirements ; in Scotland they were in luxuriant condition.

In Northern Ireland pastures were looking very well at the end of May, thanks mainly to the moist and comparatively mild weather. In the early part of the month the first crop of hay appeared to be poor and light but the moist conditions that ensued proved very beneficial and allowed rapid growth. Early-sown mangels and turnips were healthy and promising though fly was reported in a number of districts.

*Hungary* : At the end of the first week of June growth of mangolds was almost stopped by the cold weather. At that date second hoeings were in progress. The first cut of clover and of alfalfa was proceeding. Yields are average and of good quality. Other fodder crops (moha, sainfoin and mixtures of oats and vetches) have developed well but fodder maize is suffering from the cold weather.

In some localities first cutting of permanent meadows is proceeding. Yield is generally average. Pastures in general offer only a poor supply of feed due to the low temperatures and in some localities to lack of moisture.

*Italy* : Haymaking was hindered almost everywhere in May by bad weather.

*Latvia* : At the beginning of June condition of clover was average according to 36.9 % of the reports, above average according to 54.3 % and below average according to 8.8 %. The corresponding figures for permanent meadows were 57.9 %, 15.3 % and 26.8 %.

*Netherlands* : Due to the drought, which hindered growth of the grass, the condition of the meadows is only fairly good. In some districts stockrears have had to pasture their animals on meadows originally intended for cutting. Almost everywhere grass that does not attain any great height is poorly developed. It is not expected that hay production will be large.

*Poland* : After the rather cold and dry weather of the latter half of April weather became more favourable with abundant rains. On 15 May, however, the condition of meadows and pastures was still mediocre, the mild weather and the rains not having yet been able to cause any appreciable change in the crops.

*Switzerland* : The grass of the permanent meadows, in particular, suffered somewhat from late frosts and is not as thick as might be desired, so that the hay crop will probably be smaller than that of the preceding year. Clover, too, has suffered from the wet and the yield will also be lower than that of last year. On the alpine pastures growth is also rather retarded but it is developing satisfactorily.

*Czechoslovakia* : Condition of fodder crops cannot be considered satisfactory in the majority of countries. Meadow grass is low and thin and pasture is not plentiful. In the lower areas the last mixtures of winter are being given to livestock and clover is now being used.

*Egypt*: Weather in May was favourable to the ripening of *bersim*. The last harvesting is proceeding, the grains are in process of formation in the crops used for seed and some of these have begun to ripen.

*French Morocco*: Growth has proceeded rapidly; under the influence of the heat it has almost dried off in Fez and Meknez and in the coast regions; it still continues in the mountains, on the borders of the wadis and in the region of Marrakesh, where violent storms took place during the month of May. It is to be anticipated, nevertheless, that this year the natural fodder resources of the country will be quickly exhausted and that it will soon be necessary to pasture the live stock on the stubble. Haymaking and the storing in silos of natural and cultivated fodder was actively carried on at the beginning of May and was completed generally in good conditions. The harvest is now finished. Vetches and oats gave a particularly abundant yield in the Eastern region and were satisfactory in most of the other regions; in Gharb, however, a rather scanty production is reported, though quality is good.

## LIVESTOCK AND DERIVATIVES

### Number of pigs in Denmark.

In the following table is given the number of pigs on 18 April 1933 compared with that on 23 January preceding and for the same period in preceding years.

	18-IV-1933	23-I-1933	20-VI-1932	15-I-1932	15-VII-1931	15-VII-1930
Boars of 4 months and over . . . .	26,000	28,000	29,000	30,000	31,000	24,000
Sows in farrow of 4 months and over .	303,000	308,000	330,000	355,000	430,000	395,000
Sows not in farrow .	158,000	166,000	157,000	195,000	192,000	192,000
Pigs of 4 months and over for fattening	1,073,000	1,140,000	1,198,000	1,320,000	1,146,000	1,020,000
Young pigs of 2 to 4 months . . . . .	1,410,000	1,480,000	1,688,000	1,932,000	1,804,000	1,619,000
Sucking pigs under 2 months . . . . .	1,414,000	1,421,000	1,478,000	1,655,000	1,781,000	1,670,000
Total . . . .	4,381,000	4,543,000	4,880,000	5,487,000	5,444,000	4,920,000

While these data are not strictly comparable due to the variation in date they are sufficient to indicate that there has been a regression in pigbreeding, beginning early in 1932 and not yet arrested. The total of pigs on 18 April of this year shows a further decrease of 3.5 % with respect to that of 23 Jan-

uary 1933. The heaviest declines have been those of boars of four months and over (— 7.1 %) and pigs of four months and over for fattening (— 5.9 %)

On the other hand the figure for sows in farrow of four months and over has decreased only by 1.6 % and that of sucking pigs under two months has remained practically the same, with a decrease of only 0.5 %.

### **Current information on livestock and derivatives.**

*Great Britain and Northern Ireland :* The general appearance of store cattle in May was promising and in most districts the animals were in good condition, due largely to the forward state of the pastures. Dairy cattle were also in good health and conditions and the milk yield rose in consequence of the improvement in grass.

In Scotland all feeds necessary for milk production were plentiful in May but demand was quiet due to the good supply of grass. Bran and wheat offals were reduced in price.

Milk yields in England and Wales were maintained with the normal seasonal increase in most districts ; in Scotland production steadily increased and at the end of the month the yield was at its maximum and in some districts above the average for the time of year.

*Netherlands :* In the majority of the provinces milk production is above that of last year thanks to the large number of milch cows. The difference is estimated as follows : Groningen 5 %, Friesland 3 %, Gelderland 2 %, Zeeland 2.5 % to 5 % and Limburg 5 % to 10 %.

*Switzerland :* Deliveries of milk in April were 20.7 % greater than those in May and 15.5 % greater than in the corresponding month last year.

*United States :* Milk production per cow on 1 May was below the usual production at that time in practically all parts of the country. Feeding continued light in the areas largely dependent on purchased feeds and, with pastures poor, production per cow was abnormally low in most States outside of the surplus grain areas. Crop correspondents reported an average of 14.39 lb. of milk per cow on 1 May compared with 14.65 lb. last year and a 1 May average of 15.74 during the previous five years. The decrease in production per cow compared with 1 May last year about offset the increased numbers of cows on farms.

*Union of South Africa :* There was little improvement in April in general conditions. Good rains fell in the south coast districts, over a portion of the Karroo and in the Eastern Province ; stock and grazing were there consequently in good condition. Scattered rains also fell during the early part of the month over the northern Free State and in the Transvaal and Natal highveld but were insufficient to be of much value either to crops or to grazing, particularly as sharp frosts were experienced in many of the highveld areas. Throughout the Orange Free State and Transvaal highveld grazing was short and fodder crops poor and the problem of feed for stock during the winter was expected to be a serious one. In some of the inland districts of Natal, however, winter grazing was reported to be plentiful and many farmers from the Free State had hired veld for their stock. Good veld was also avail-

able in the northeastern and eastern lowveld of the Transvaal but springs were weak and dams low and there was a shortage of water for stock and irrigation. No improvement was reported in the northwest Cape, Bechuanaland and Griqualand West and heavy stock losses continued to be suffered. Conditions were too serious in many districts to bring about immediate relief.

### LATEST INFORMATION

*Netherlands* : The Government of the Netherlands has communicated to the Institute the following data of areas sown and crop condition of cereals on 1 June:

	Area in acres		% 1932-33 1931-32 = 100	Crop condition on 12 June
	1932-33	1931-32		
Wheat winter . . . .	279,930	251,819	111.2	73
spring . . . .	51,586	44,887	114.9	69
Rye . . . . .	406,450	409,526	99.2	70
Barley winter . . . .	17,399	16,453	105.8	73
spring . . . .	26,238	32,898	79.8	68
Oats !. . . . .	337,487	350,428	96.3	68

*Argentina* (Telegram of 22 June) : Cereal and linseed sowings are 1. full swing and are being carried out under favourable conditions. Germination is regular and uniform and development of crops is very strong.

Temperatures have recently been very high and cooler weather is desired. Slight damage is reported over a limited part of the country. In the province of Buenos Aires excessive precipitations is reported in some localities in the north, while in part of the province of Santa Fé grasshopper damage has occurred and in part of the province of Cordoba there are complaints of rain scarcity.

*Canada* (Telegram of 20 June) : Telegraphic advices received from the Prairie Provinces on 20 June report almost without exception extensive crop damage as a result of the extremely high temperatures and limited rainfall of the past week. General rains are required to prevent further damage. Increasing injury due to insects, disease, hail and high winds is also reported. Grasshoppers are still numerous and threatening but are under control in most districts. Wireworms and rootrot are prevalent in wheat on summer fallow in Saskatchewan and Alberta. The districts most affected by drought are Southern Manitoba, Western Saskatchewan and Southern Alberta. Fair and cool weather is forecasted.

*United States* (Telegram of 22 June) : The condition of both spring and winter cereals deteriorated during the past week on account of the weather being too warm and dry.

(Telegram of 22 June) : Cotton crop progress is fairly satisfactory.

*Australia* (Telegram of 22 June) : Sowings for the 1933-34 crop are almost at an end; have taken place under prevalently satisfactory conditions save in some districts of New South Wales where drought is reported.

*Japan* : Production of wheat, excluding that in Hokkaido, is estimated this year at 22,877,000 centals (38,128,000 bushels) against 18,532,000 centals (30,886,000 bushels) in 1932, an increase of 23.4 %. That of barley, **excluding that in Hokkaido**, is estimated at 33,425,000 centals (69,636,000 bushels) against 37,021,000 (77,128,000), a decrease of 9.7 %.

## TRADE

COUNTRIES	APRIL				NINE MONTHS (August 1-April 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	71	456	0	0	1,263	5,115	0	0	5,688	0
Hungary . . . . .	53	212	0	0	2,242	6,912	2	0	7,912	0
Lithuania . . . . .	0	2	0	0	2	20	0	0	20	0
Poland . . . . .	42	351	4	4	293	1,041	483	333	1,598	346
Rumania . . . . .	0	721	0	0	24	20,604	9	7	21,200	9
U. S. S. R. . . . .	...	...	...	...	10,838	39,683	1,373	2)	39,820	1,515
Yugoslavia . . . . .	2	772	0	0	503	8,027	0	0	8,796	0
Canada . . . . .	2,676	4,508	0	2	111,182	79,071	29	60	109,685	75
United States . . . . .	117	5,613	419	476	11,466	42,256	9,990	5,836	52,803	7,361
Argentina . . . . .	9,573	12,838	—	—	51,679	67,773	—	—	81,618	—
Chile . . . . .	0	2	44	0	7	7	697	0	9	0
Turkey . . . . .	29	106	0	0	128	752	0	0	913	0
Algeria . . . . .	386	390	20	60	4,500	3,075	858	1,131	4,837	1,462
Tunis . . . . .	73	240	4	35	2,610	2,075	337	355	5,337	401
Australia . . . . .	5,573	7,785	0	0	59,417	55,427	0	0	73,793	0
<i>Importing Countries:</i>										
Germany . . . . .	185	110	1,076	908	12,403	7,282	13,375	12,227	7,313	21,006
Austria . . . . .	0	0	549	399	0	0	4,603	4,969	0	6,418
Belgium . . . . .	229	265	2,646	2,542	1,543	3,049	19,606	22,434	3,587	31,478
Denmark . . . . .	0	0	355	370	15	9	4,941	7,061	9	8,719
Spain . . . . .	0	0	0	0	0	0	0	35	0	6,482
Estonia . . . . .	0	0	0	35	0	0	0	216	0	256
Irish Free State . . . . .	0	7	862	542	4	13	6,257	4,901	13	6,369
Finland . . . . .	0	0	57	24	0	0	668	289	0	428
France . . . . .	0	0	1,376	6,144	46	9	19,068	34,776	9	53,140
Gr. Brit. and N. Irel. . . . .	97	187	11,654	10,450	300	644	91,997	105,765	1,206	137,664
Greece . . . . .	0	0	642	1,202	0	0	8,752	10,690	0	14,116
Italy . . . . .	0	0	1,043	3,660	13	18	9,039	12,293	18	22,547
Latvia . . . . .	0	0	0	20	2	0	18	366	0	575
Norway . . . . .	0	0	328	340	0	0	2,385	2,789	0	3,294
Netherlands . . . . .	15	4	1,100	1,263	496	97	11,676	13,550	110	17,875
Portugal . . . . .	—	—	73	15	—	—	421	516	—	1,393
Sweden . . . . .	0	2	121	406	11	7	1,695	2,974	9	4,054
Switzerland . . . . .	0	0	871	911	13	11	8,927	9,866	18	12,683
Czechoslovakia . . . . .	0	0	602	994	2	4	2,388	10,102	4	13,199
India . . . . .	4	4	44	0	37	174	794	179	183	179
Japan . . . . .	—	—	1,188	1,706	—	—	8,916	12,114	—	17,070
Syria and Lebanon . . . . .	4	24	42	62	260	481	172	97	511	328
Egypt . . . . .	...	...	...	...	4	0	2)	769	2	994
Union of South Africa . . . . .	...	...	...	...	0	0	143	847	2	1,034
New Zealand . . . . .	...	...	...	...	0	0	692	75	0	258
<b>Totals . . . . .</b>	<b>19,129</b>	<b>34,599</b>	<b>25,118</b>	<b>32,570</b>	<b>271,393</b>	<b>343,636</b>	<b>224,313</b>	<b>277,622</b>	<b>427,023</b>	<b>392,728</b>
<b>Rye. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	9	29	0	0	64	981	0	0	990	0
Hungary . . . . .	84	101	0	0	798	1,118	0	0	1,486	0
Lithuania . . . . .	11	0	0	0	35	0	0	2	9	2
Poland . . . . .	425	179	0	0	4,652	2,068	216	123	2,513	123
Rumania . . . . .	0	93	0	0	9	1,601	0	0	1,678	0
U. S. S. R. . . . .	...	...	—	—	4,795	22,754	—	—	23,640	—
Canada . . . . .	0	168	0	0	1,468	2,105	0	0	5,066	0
United States . . . . .	2	157	0	0	20	187	0	0	622	—
Argentina . . . . .	...	...	—	—	1,272	2,954	—	—	5,049	—
Turkey . . . . .	22	106	0	0	262	628	0	0	690	0
Algeria . . . . .	0	0	0	0	11	11	0	0	29	0
<i>Importing Countries:</i>										
Germany . . . . .	29	9	485	2,205	2,970	2,026	5,831	6,050	2,046	12,103
Austria . . . . .	0	0	62	101	0	0	326	1,107	0	1,728
Belgium . . . . .	26	90	117	139	269	388	1,938	1,682	639	2,709
Denmark . . . . .	0	0	271	295	0	0	4,442	3,591	0	4,731
Estonia . . . . .	0	0	0	0	0	0	0	7	0	13
Finland . . . . .	0	0	44	139	0	0	736	470	0	1,202
France . . . . .	0	0	18	99	0	0	355	1,299	0	1,737
Italy . . . . .	0	0	24	26	0	0	229	117	0	157
Latvia . . . . .	0	0	0	11	0	0	0	86	0	99
Norway . . . . .	0	0	351	328	0	0	2,277	2,923	—	3,415
Netherlands . . . . .	22	7	328	141	64	282	3,177	2,912	331	4,193
Sweden . . . . .	2	15	2	90	13	15	254	930	26	1,334
Switzerland . . . . .	0	0	9	11	0	0	313	71	0	108
Czechoslovakia . . . . .	2	0	0	137	53	7	95	4,802	7	5,124
<b>Totals . . . . .</b>	<b>634</b>	<b>954</b>	<b>1,711</b>	<b>3,722</b>	<b>16,755</b>	<b>37,125</b>	<b>20,189</b>	<b>26,172</b>	<b>44,821</b>	<b>38,778</b>

1) 2) See notes page 418.



COUNTRIES	APRIL				NINE MONTHS (August 1-April 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wheat flour. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Germany . . . . .	293	7	11	11	1,442	60	60	163	64	229
Belgium . . . . .	4	7	0	0	44	53	55	42	73	51
Bulgaria . . . . .	0	60	0	0	49	600	0	0	752	0
Spain . . . . .	0	0	0	0	4	15	0	0	18	0
France . . . . .	384	265	24	18	3,084	4,255	351	187	4,764	262
Hungary . . . . .	33	132	0	0	721	1,832	0	0	2,130	0
Italy . . . . .	203	134	26	22	2,868	1,768	216	229	2,235	287
Latvia . . . . .	0	0	0	0	0	0	0	0	0	0
Lithuania . . . . .	2	2	0	0	15	22	0	0	26	0
Poland . . . . .	13	24	0	0	203	459	0	4	511	4
Rumania . . . . .	0	26	0	0	13	847	0	0	855	0
Yugoslavia . . . . .	2	15	0	0	51	73	0	0	104	0
Canada . . . . .	459	500	0	0	7,386	7,652	24	31	10,551	40
United States . . . . .	650	1,056	0	0	6,561	12,932	2	0	15,091	0
Argentina . . . . .	...	...	—	—	992	1,129	—	—	1,545	—
Chile . . . . .	0	2	86	0	4	15	231	0	29	0
India . . . . .	9	60	0	0	262	681	2	0	836	0
Turkey . . . . .	0	7	0	0	0	9	0	4	11	4
Japan . . . . .	686	359	0	9	5,031	2,238	11	93	3,470	106
Algeria . . . . .	42	11	9	2	346	86	57	49	157	57
Tunis . . . . .	11	15	7	2	126	97	40	18	146	20
Australia . . . . .	979	1,164	0	0	9,936	10,959	0	0	13,995	0
<i>Importing Countries:</i>										
Austria . . . . .	0	0	20	108	0	7	459	899	7	1,261
Denmark . . . . .	2	2	53	86	11	9	571	1,058	13	1,290
Estonia . . . . .	0	0	0	0	0	9	0	15	9	15
Irish Free State . . . . .	0	0	90	439	0	22	1,371	3,005	26	4,048
Finland . . . . .	0	0	88	79	0	0	902	1,241	0	1,596
Gr. Brit. and N. Irel. . . . .	324	580	717	699	3,296	4,151	6,521	8,636	5,628	11,224
Greece . . . . .	0	0	0	4	0	0	18	57	0	66
Norway . . . . .	0	0	123	90	4	9	829	1,140	11	1,358
Netherlands . . . . .	0	2	79	53	18	64	681	584	71	723
Portugal . . . . .	—	—	26	7	—	—	192	110	—	201
Sweden . . . . .	0	0	0	2	0	0	7	31	0	37
Czechoslovakia . . . . .	0	2	7	93	7	7	304	882	9	1,182
Ceylon . . . . .	—	—	...	...	—	—	273	302	—	401
Java and Madura . . . . .	—	—	...	...	—	—	683	789	—	1,144
Indo-China . . . . .	—	—	26	33	—	—	262	306	—	388
Syria and Lebanon . . . . .	9	2	126	53	77	88	615	293	93	397
Egypt . . . . .	...	...	...	...	2	1	176	2,000	0	2,430
Union of South Africa . . . . .	...	...	...	...	1	1	2	11	2	15
New Zealand . . . . .	...	...	...	...	2	2	170	172	4	238
<b>Totals . . . . .</b>	<b>4,105</b>	<b>4,434</b>	<b>1,518</b>	<b>1,810</b>	<b>42,555</b>	<b>50,152</b>	<b>15,087</b>	<b>22,351</b>	<b>63,236</b>	<b>29,074</b>
<b>Barley. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	15	2	0	0	104	399	0	0	406	0
Spain . . . . .	9	4	0	0	44	9	0	0	15	0
Hungary . . . . .	22	2	0	0	1,175	49	0	7	55	7
Lithuania . . . . .	0	0	0	0	2	0	0	0	0	0
Poland . . . . .	183	205	0	0	3,305	3,007	0	0	3,146	0
Rumania . . . . .	225	811	0	0	9,211	14,288	0	0	15,913	0
Czechoslovakia . . . . .	185	287	0	0	3,424	1,411	—	2	2,112	2
U. S. S. R. . . . .	...	...	—	—	7,630	17,611	—	—	17,789	—
Canada . . . . .	11	295	0	0	2,328	4,376	0	0	6,499	0
United States . . . . .	165	90	0	0	3,437	1,612	—	0	2,524	—
Argentina . . . . .	...	...	—	—	4,881	5,443	—	—	6,274	—
Chile . . . . .	29	77	0	0	97	428	0	0	492	0
India . . . . .	0	86	0	0	4	375	0	0	666	0
Syria and Lebanon . . . . .	0	4	13	0	31	373	315	79	384	104
Turkey . . . . .	82	203	0	0	761	2,628	0	0	2,996	0
Egypt . . . . .	...	...	...	...	64	0	1	265	2	273
Tunis . . . . .	66	2	0	11	2,392	126	33	551	820	556
Australia . . . . .	152	73	0	0	1,038	1,429	0	0	1,614	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	340	2,392	4	18	2,544	12,959	18	15,970
Austria . . . . .	0	0	97	134	0	0	1,411	1,755	0	2,075
Belgium . . . . .	51	181	741	620	1,168	1,332	7,626	7,923	1,676	9,396
Denmark . . . . .	40	24	176	117	344	439	1,623	2,438	483	3,331
Irish Free State . . . . .	0	0	49	2	2	26	66	304	26	483
France . . . . .	4	0	397	631	4	15	6,570	7,366	15	9,482
Gr. Brit. and N. Irel. . . . .	4	0	1,016	714	35	9	10,913	12,216	31	14,039
Greece . . . . .	0	0	2	7	0	0	11	159	0	172
Italy . . . . .	0	0	66	97	0	0	820	666	0	800
Latvia . . . . .	0	0	0	0	0	0	0	4	0	4
Norway . . . . .	0	0	0	110	0	0	90	701	0	794
Netherlands . . . . .	37	24	767	633	95	238	6,848	7,494	262	9,112
Switzerland . . . . .	0	0	159	245	0	0	4,043	2,421	2	2,989
Yugoslavia . . . . .	2	0	0	0	24	13	4	37	13	37
Algeria . . . . .	0	18	108	77	75	595	1,852	2,141	620	2,520
<b>Totals . . . . .</b>	<b>1,282</b>	<b>2,388</b>	<b>3,931</b>	<b>5,790</b>	<b>41,679</b>	<b>56,249</b>	<b>44,771</b>	<b>59,488</b>	<b>64,844</b>	<b>72,146</b>

COUNTRIES	APRIL				NINE MONTHS (August 1-April 30)				TWELVE MONTHS August 1-July 31	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Oats. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . . .	7	4	0	13	24	66	9	205	73	218
Hungary . . . . .	84	0	0	0	271	4	0	2	7	2
Lithuania . . . . .	0	0	0	0	0	13	0	0	20	0
Poland . . . . .	11	9	0	0	168	35	0	0	62	0
Rumania . . . . .	0	20	0	0	624	231	0	0	293	0
Czechoslovakia . . .	172	104	0	0	2,672	525	0	55	884	57
Yugoslavia . . . . .	0	0	0	0	0	0	0	0	2	0
Canada . . . . .	51	595	11	0	3,009	3,479	683	536	4,628	655
United States . . . .	37	13	0	2	1,142	672	4	13	895	22
Argentina . . . . .	639	2,039	—	—	8,686	13,210	—	—	16,380	—
Chile . . . . .	18	0	0	0	159	137	0	0	223	0
Algeria . . . . .	7	40	0	26	121	271	31	368	295	384
Tunis . . . . .	2	4	0	0	88	141	0	0	212	0
Australia . . . . .	2	4	0	0	84	66	0	2	108	2
<i>Importing Countries:</i>										
Germany . . . . .	82	2	75	11	137	9	344	192	9	223
Austria . . . . .	0	0	4	150	0	0	527	1,109	0	1,464
Belgium . . . . .	0	11	170	214	7	22	635	988	37	1,504
Denmark . . . . .	0	0	75	44	64	66	223	373	60	500
Estonia . . . . .	0	0	0	0	0	0	0	7	0	7
Finland . . . . .	0	0	9	0	2	20	46	40	20	55
France . . . . .	0	0	24	615	4	7	1,025	1,728	7	3,214
Gr. Brit. and N. Irel.	0	9	624	584	22	201	4,621	6,047	203	8,494
Italy . . . . .	0	0	362	503	0	0	2,132	3,071	0	4,074
Latvia . . . . .	0	0	0	0	0	0	0	7	0	7
Norway . . . . .	0	0	0	18	0	2	13	238	2	273
Netherlands . . . . .	2	2	194	243	24	42	2,046	1,825	44	2,383
Sweden . . . . .	2	31	64	128	46	73	414	915	181	1,105
Switzerland . . . . .	0	0	414	597	0	0	4,023	3,781	2	5,033
<b>Totals . . . . .</b>	<b>1,116</b>	<b>2,887</b>	<b>2,026</b>	<b>3,148</b>	<b>17,354</b>	<b>19,292</b>	<b>16,776</b>	<b>21,502</b>	<b>24,653</b>	<b>29,676</b>
<b>Maize. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>					SIX MONTHS (November 1-April 30)				TWELVE MONTHS (Nov. 1-Oct. 31)	
Bulgaria . . . . .	278	478	0	0	1,753	1,823	0	0	2,890	0
Rumania . . . . .	4,090	4,522	0	0	23,795	20,770	0	0	34,421	2
Yugoslavia . . . . .	1,113	225	0	0	5,807	1,318	0	24	1,825	26
United States . . . .	77	260	2	20	2,256	858	55	141	3,084	220
Argentina . . . . .	9,035	18,808	—	—	43,819	89,627	—	—	175,713	—
Brazil . . . . .	—	—	—	—	0	0	—	—	2	—
Java and Madura . . .	—	—	—	—	1,032	1,466	—	—	2,467	—
Indo China . . . . .	119	7	—	—	1,956	1,272	—	—	3,459	—
Syria and Lebanon . .	0	0	35	4	4	7	99	11	7	37
Turkey . . . . .	26	37	0	0	97	141	0	0	373	0
Egypt . . . . .	—	—	—	—	119	7	4	29	15	46
Union of South Africa	31	181	0	0	3,505	1,592	0	0	4,991	0
<i>Importing Countries:</i>										
Germany . . . . .	0	0	381	2,202	0	0	4,378	8,111	0	17,007
Austria . . . . .	0	0	805	593	0	0	5,805	3,796	0	7,628
Belgium . . . . .	60	181	1,054	979	483	838	8,556	9,475	1,385	18,691
Denmark . . . . .	0	0	666	1,673	0	0	7,403	10,750	0	21,231
Spain . . . . .	0	0	187	474	0	0	1,138	3,505	0	6,931
Irish Free State . . .	0	0	238	908	0	0	2,855	6,259	0	13,658
Finland . . . . .	0	0	82	50	0	0	452	238	0	582
France . . . . .	0	7	3,058	1,404	0	20	10,351	11,841	26	25,869
Gr. Brit. and N. Irel.	121	280	3,657	2,427	831	1,455	28,153	33,277	3,208	64,058
Greece . . . . .	0	0	99	575	0	0	280	3,053	0	3,382
Hungary . . . . .	256	9	0	0	1,389	60	0	245	93	939
Italy . . . . .	0	2	108	1,493	2	4	992	7,229	7	15,737
Norway . . . . .	0	0	269	289	0	0	1,556	2,070	0	4,092
Netherlands . . . . .	7	40	2,189	2,163	53	139	18,651	21,341	223	36,892
Poland . . . . .	0	0	2	7	0	0	31	57	0	126
Portugal . . . . .	—	—	86	93	—	—	481	549	—	1,407
Sweden . . . . .	0	0	238	406	0	0	2,368	3,067	0	6,135
Switzerland . . . . .	0	0	132	159	0	0	1,175	1,878	2	3,717
Czechoslovakia . . .	0	0	256	1,149	0	0	807	6,907	0	9,958
Canada . . . . .	0	0	57	53	20	4	2,789	2,313	13	3,891
Japan . . . . .	—	—	7	216	—	—	18	1,274	—	1,695
Tunis . . . . .	0	0	0	13	0	0	0	315	0	324
<b>Totals . . . . .</b>	<b>15,213</b>	<b>25,037</b>	<b>13,608</b>	<b>17,350</b>	<b>86,921</b>	<b>121,401</b>	<b>98,397</b>	<b>137,755</b>	<b>234,204</b>	<b>264,281</b>

1) See notes page 418.

COUNTRIES	APRIL				FOUR MONTHS (January 1-April 30)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Rice. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Spain . . . . .	13	42	0	0	46	322	0	0	871	0
Italy . . . . .	386	203	9	9	1,162	1,360	44	20	3,505	55
United States . . . . .	159	362	22	26	668	981	110	104	2,586	190
Brazil . . . . .	...	...	—	—	15	130	—	—	615	—
India . . . . .	4,661	5,307	13	11	16,477	22,853	212	97	48,001	683
Indo-China . . . . .	3,031	2,156	—	—	11,376	9,286	—	—	26,983	—
Siam . . . . .	3,051	2,553	—	—	13,287	11,239	—	—	34,106	—
Egypt . . . . .	...	...	...	...	549	57	2	461	1,032	710
<i>Importing Countries:</i>										
Germany . . . . .	68	95	811	666	223	298	2,141	2,103	1,047	8,481
Austria . . . . .	0	0	42	31	0	0	190	150	0	549
Belgium . . . . .	7	22	148	132	24	93	408	379	201	1,208
Denmark . . . . .	0	0	15	11	0	0	55	35	0	139
Estonia . . . . .	—	—	0	2	—	—	4	7	—	15
Irish Free State . . . . .	0	0	7	4	—	0	20	13	2	46
France . . . . .	163	84	1,071	780	417	273	3,781	2,187	864	8,329
Gr. Brit. and N. Irel. . . . .	9	18	340	317	40	84	728	988	163	2,747
Greece . . . . .	—	—	31	46	—	—	159	190	—	540
Hungary . . . . .	0	0	44	24	0	0	121	119	0	465
Latvia . . . . .	0	0	2	2	0	0	4	4	0	18
Lithuania . . . . .	0	0	0	0	0	0	2	4	0	20
Norway . . . . .	0	0	7	4	0	0	26	18	0	71
Netherlands . . . . .	104	134	827	798	419	564	1,581	979	1,863	2,784
Poland . . . . .	0	29	183	163	18	99	251	183	317	1,027
Portugal . . . . .	—	—	60	161	—	—	211	370	—	875
Sweden . . . . .	—	—	0	0	—	—	0	0	—	90
Switzerland . . . . .	0	0	161	33	0	0	304	134	0	432
Czechoslovakia . . . . .	0	0	49	93	0	0	214	278	0	1,096
Yugoslavia . . . . .	0	0	37	37	0	2	179	170	2	494
Canada . . . . .	0	0	53	33	0	0	157	218	9	593
Chile . . . . .	—	—	26	22	—	—	51	117	—	187
Ceylon . . . . .	...	...	...	...	0	0	2,641	3,234	4	10,386
Java and Madura . . . . .	...	...	...	...	0	0	1,398	1,715	73	3,303
Japan . . . . .	11	7	271	247	207	24	1,111	1,074	1,034	3,369
Syria and Lebanon . . . . .	0	0	35	40	0	0	130	126	0	392
Turkey . . . . .	0	0	0	7	0	0	20	22	0	93
Algeria . . . . .	4	0	20	31	13	2	110	77	9	198
Tunis . . . . .	0	0	2	4	0	0	13	24	0	40
Union of South Africa . . . . .	...	...	...	...	0	0	247	185	0	895
Australia . . . . .	4	9	2	13	22	37	18	26	86	49
New Zealand . . . . .	...	...	...	...	0	0	20	16	0	64
<b>Totals . . . . .</b>	<b>11,671</b>	<b>11,021</b>	<b>4,288</b>	<b>3,747</b>	<b>44,965</b>	<b>47,715</b>	<b>16,666</b>	<b>15,827</b>	<b>123,373</b>	<b>50,633</b>
<b>Linseed. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
Estonia . . . . .	0	0	4	0	0	2	13	0	2	4
Lithuania . . . . .	9	13	0	—	35	93	0	0	170	0
Argentina . . . . .	2,971	1,318	—	—	14,467	16,484	—	—	42,188	—
India . . . . .	225	154	0	0	571	613	0	0	1,728	0
Tunis . . . . .	0	0	0	0	2	4	0	0	24	0
<i>Importing Countries:</i>										
Germany . . . . .	2	0	747	1,049	9	4	3,448	2,890	20	9,841
Belgium . . . . .	4	13	280	353	33	101	1,521	1,373	139	3,673
Denmark . . . . .	—	—	60	68	—	—	168	174	—	534
Spain . . . . .	—	—	18	71	—	—	90	115	—	494
Finland . . . . .	0	0	11	4	0	0	33	20	0	75
France . . . . .	0	2	644	624	2	2	2,202	1,609	7	5,049
Gr. Brit. and N. Irel. . . . .	0	0	531	780	2	2	2,150	2,930	4	8,294
Greece . . . . .	0	0	7	7	0	0	26	18	0	88
Hungary . . . . .	0	2	9	0	0	4	18	0	9	29
Italy . . . . .	0	0	95	121	0	0	531	434	0	1,512
Latvia . . . . .	0	2	11	0	31	18	29	31	53	75
Norway . . . . .	0	0	33	66	0	0	123	143	0	403
Netherlands . . . . .	4	2	734	690	24	64	3,223	3,468	75	9,912
Poland . . . . .	0	0	53	4	0	2	196	33	4	271
Sweden . . . . .	—	—	95	154	—	—	324	375	—	957
Czechoslovakia . . . . .	2	0	35	66	2	2	146	143	2	798
Yugoslavia . . . . .	0	0	7	11	0	0	36	11	0	115
Canada . . . . .	0	0	0	11	0	0	0	33	205	256
United States . . . . .	—	—	123	869	—	2	1,058	2,306	—	4,502
Japan . . . . .	—	—	33	18	—	—	128	99	—	148
Australia . . . . .	0	0	20	9	0	0	68	203	0	450
<b>Totals . . . . .</b>	<b>3,217</b>	<b>3,206</b>	<b>3,550</b>	<b>4,975</b>	<b>15,182</b>	<b>17,397</b>	<b>15,528</b>	<b>16,408</b>	<b>44,630</b>	<b>47,480</b>

1) See notes page 418.

COUNTRIES	APRIL				FOUR MONTHS (January 1-April 30)				TWELVE MONTHS (January 1-Dec. 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1933	1932	1933	1932	1932	1932
<b>Butter. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Austria . . . . .	0	0	84	119	368	238	90	148	1,565	802
Denmark . . . . .	27,373	31,700	123	236	105,732	114,378	267	578	347,886	922
Estonia . . . . .	829	2,075	0	0	3,034	5,218	0	0	27,626	0
Irish Free State . . . . .	946	278	0	112	3,558	968	2	2,222	36,932	2,632
Finland . . . . .	2,443	4,266	0	0	9,103	13,466	0	0	32,020	0
Hungary . . . . .	401	60	0	0	2,319	1,131	0	0	4,495	0
Latvia . . . . .	2,954	3,472	0	0	8,523	9,270	0	0	41,000	2
Lithuania . . . . .	1,155	1,175	0	0	3,285	2,912	0	0	21,883	0
Norway . . . . .	0	478	0	4	642	1,662	4	13	2,421	90
Netherlands . . . . .	5,307	3,527	282	586	19,535	11,958	534	7,564	44,926	9,323
Poland . . . . .	2	243	0	0	123	1,501	0	9	2,707	866
Sweden . . . . .	1,801	2,017	9	0	9,566	10,723	13	11	29,675	33
U. S. S. R. . . . .	...	...	—	—	2,231	3,373	—	—	68,198	—
Argentina . . . . .	...	...	—	—	14,476	21,539	—	—	55,973	—
India . . . . .	11	26	24	31	77	106	134	152	260	428
Syria and Lebanon . . . . .	0	26	18	168	55	130	377	591	315	1,867
Australia . . . . .	12,037	13,177	0	0	88,571	76,928	0	0	229,105	0
New Zealand . . . . .	25,479	25,150	—	—	107,546	87,625	—	—	244,787	—
<i>Importing Countries:</i>										
Germany . . . . .	2	86	10,827	9,645	4	126	33,118	54,558	478	153,264
Belgium . . . . .	24	291	1,980	7,013	77	743	13,477	24,421	1,841	46,760
Spain . . . . .	2	2	0	2	9	18	2	20	44	42
France . . . . .	527	342	450	5,128	1,940	2,156	15,620	12,322	7,921	26,140
Gr. Brit. and N. Irel . . . . .	611	1,653	85,698	67,080	3,560	26,169	332,169	301,730	35,693	946,298
Greece . . . . .	—	—	62	84	—	—	170	597	—	1,197
Italy . . . . .	148	134	150	198	441	337	1,283	2,782	827	3,816
Switzerland . . . . .	0	0	22	1,299	0	2	534	5,505	7	8,151
Czechoslovakia . . . . .	0	0	68	445	0	26	84	800	26	2,703
Canada . . . . .	11	71	470	7	121	481	1,263	163	3,505	238
United States . . . . .	71	115	123	172	361	503	427	510	1,607	1,014
Ceylon . . . . .	—	—	...	...	—	—	146	146	—	602
Java and Madura . . . . .	—	—	...	...	—	—	1,388	1,779	—	8,766
Japan . . . . .	—	—	79	7	—	—	204	51	—	163
Algeria . . . . .	2	4	335	344	11	20	1,336	1,415	35	3,955
Egypt . . . . .	...	...	...	...	95	170	207	234	384	825
Tunis . . . . .	0	0	130	108	4	0	600	410	4	1,305
<b>Totals . . . . .</b>	<b>82,136</b>	<b>90,368</b>	<b>100,934</b>	<b>92,788</b>	<b>385,367</b>	<b>393,877</b>	<b>404,349</b>	<b>418,731</b>	<b>1,244,346</b>	<b>1,222,204</b>
<b>Cheese. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Bulgaria . . . . .	95	15	0	0	754	293	0	2	2,601	4
Denmark . . . . .	1,627	666	13	11	6,530	3,360	35	62	14,535	130
Finland . . . . .	679	620	2	0	2,469	2,315	9	7	7,225	26
Italy . . . . .	4,713	5,900	822	699	16,667	22,110	2,529	2,363	66,373	8,805
Lithuania . . . . .	75	112	0	0	377	602	0	0	1,768	7
Norway . . . . .	231	203	20	15	1,250	1,074	64	88	3,644	240
Netherlands . . . . .	9,784	14,103	55	82	44,955	50,043	254	364	170,061	1,076
Poland . . . . .	44	44	13	40	82	417	148	159	767	586
Switzerland . . . . .	4,264	3,406	287	390	13,706	13,010	1,071	1,773	43,700	4,755
Czechoslovakia . . . . .	119	390	289	287	948	2,793	840	805	6,124	3,071
Yugoslavia . . . . .	97	64	9	18	564	569	29	66	2,617	150
Canada . . . . .	278	377	31	55	1,400	2,727	223	311	86,940	1,166
Australia . . . . .	1,027	340	7	0	5,512	2,769	20	4	8,801	60
New Zealand . . . . .	17,236	22,044	0	0	89,398	82,156	2	0	192,175	2
<i>Importing Countries:</i>										
Germany . . . . .	251	227	4,780	8,005	1,645	1,373	29,203	30,060	4,237	108,688
Austria . . . . .	335	282	190	481	1,351	472	736	1,537	3,982	3,732
Belgium . . . . .	20	44	3,298	3,212	123	201	13,786	13,181	551	45,660
Spain . . . . .	500	29	172	130	529	71	547	593	238	2,480
Irish Free State . . . . .	0	0	7	203	0	22	163	717	37	2,019
France . . . . .	2,606	2,798	3,805	3,053	9,293	11,078	16,898	15,450	29,211	52,267
Gr. Brit. and N. Irel . . . . .	428	584	30,091	22,802	2,015	2,410	117,718	110,238	7,242	336,733
Greece . . . . .	33	7	146	243	229	11	432	1,005	620	1,753
Hungary . . . . .	2	7	4	0	13	20	11	9	33	11
Portugal . . . . .	—	—	40	31	—	—	99	119	—	608
Sweden . . . . .	—	—	73	68	—	—	276	298	—	1,045
United States . . . . .	123	97	3,891	5,280	454	514	13,398	17,359	1,534	55,643
India . . . . .	0	0	82	88	0	0	309	293	2	950
Java and Madura . . . . .	—	—	...	...	—	—	340	267	—	1,642
Syria and Lebanon . . . . .	4	9	276	44	9	11	750	322	68	1,195
Algeria . . . . .	11	15	1,010	1,067	53	62	3,851	2,956	159	10,033
Egypt . . . . .	...	...	...	...	66	108	1,281	1,041	254	5,260
Tunis . . . . .	2	0	223	174	9	2	851	701	13	2,191
<b>Totals . . . . .</b>	<b>44,584</b>	<b>52,383</b>	<b>49,636</b>	<b>46,478</b>	<b>200,401</b>	<b>200,593</b>	<b>205,873</b>	<b>202,150</b>	<b>655,512</b>	<b>651,988</b>

1) See notes page 418.

COUNTRIES	APRIL				NINE MONTHS (August 1-April 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Cotton. — Thousand centals (1 cental = 100 lb.).</b>										
<i>Exporting Countries:</i>										
United States . . .	2,403	2,950	37	79	35,281	39,699	478	370	46,787	620
Argentina . . .	...	...	—	—	298	267	—	—	584	—
Brazil . . .	...	...	—	—	2	179	—	—	183	—
India . . .	1,160	379	157	608	7,597	5,644	644	1,446	7,075	2,249
Egypt . . .	...	...	...	...	4,224	5,686	0	0	7,500	0
<i>Importing Countries:</i>										
Germany . . .	75	123	624	979	983	1,283	6,768	6,755	1,640	8,327
Austria . . .	0	0	33	42	0	0	309	445	0	553
Belgium . . .	26	29	117	86	201	276	1,448	1,109	348	1,349
Denmark . . .	—	—	15	7	—	—	106	95	—	134
Spain . . .	0	2	128	218	11	18	1,376	1,519	22	2,048
Estonia . . .	0	0	4	9	0	0	44	55	0	75
Finland . . .	0	0	4	18	0	0	123	121	0	159
France . . .	31	31	534	608	265	403	5,681	3,012	494	4,286
Gr. Brit. and N. Irel.	44	53	681	1,003	364	322	9,343	9,846	485	12,452
Greece . . .	0	0	18	24	0	0	132	159	0	192
Hungary . . .	0	0	26	11	0	0	300	291	0	333
Italy . . .	0	0	348	364	0	0	3,269	3,126	0	4,037
Latvia . . .	0	0	9	2	0	0	60	40	0	51
Norway . . .	0	0	4	7	0	0	46	35	0	44
Netherlands . . .	0	0	64	73	9	7	586	725	7	858
Poland . . .	0	2	60	88	15	20	838	783	22	1,074
Portugal . . .	—	—	40	40	—	—	344	293	—	434
Sweden . . .	—	—	42	53	—	—	403	439	—	564
Switzerland . . .	0	0	49	40	2	4	437	410	4	505
Czechoslovakia . . .	7	11	128	194	79	108	1,420	1,605	137	2,002
Yugoslavia . . .	0	0	15	15	0	0	132	161	0	201
Canada . . .	—	—	42	64	—	—	742	765	—	974
Japan . . .	0	229	1,451	2,293	302	800	6,984	12,952	1,041	16,484
Algeria . . .	2	0	0	0	4	2	4	4	4	7
<b>Totals . . .</b>	<b>3,748</b>	<b>3,809</b>	<b>4,630</b>	<b>6,925</b>	<b>49,637</b>	<b>54,718</b>	<b>42,007</b>	<b>46,561</b>	<b>66,333</b>	<b>60,012</b>

**Wool. — (Thousand lb.).**

COUNTRIES	APRIL				NINE MONTHS (August 1-April 30)				TWELVE MONTHS (August 1-July 31)	
	EXPORTS		IMPORTS		EXPORTS		IMPORTS		EXPORTS	IMPORTS
	1933	1932	1933	1932	1932-33	1931-32	1932-33	1931-32	1931-32	1931-32
<b>Wool. — (Thousand lb.).</b>										
<i>Exporting Countries:</i>										
Irish Free State . .	866	509	26	29	8,131	7,130	476	529	9,949	948
Hungary . . .	139	35	185	73	1,850	1,213	1,193	917	2,344	1,285
Argentina . . . (a)	...	...	—	—	188,564	155,367	—	—	249,842	—
Chile . . . (b)	...	...	—	—	9,169	5,135	—	—	8,115	—
India . . .	2,079	7,901	—	—	14,134	23,949	—	—	25,175	—
Syria and Lebanon . .	2,712	2,291	368	595	28,371	27,474	5,027	3,199	35,402	5,020
Algeria . . .	123	101	2	73	2,271	2,522	948	507	3,935	985
Egypt . . .	584	492	112	84	4,597	4,195	1,175	862	6,856	1,252
Un. of S. Africa . . (a)	14,828	40,221	...	...	1,662	935	7	2	1,413	4
Australia . . . (b)	463	589	...	194	219,976	241,486	379	935	298,046	1,261
New Zealand . . . (a)	68,674	67,830	408	99	4,160	3,386	1,812	7	5,296	2,008
...	5,673	4,094	0	0	740,196	665,095	4,101	1,812	762,756	15
...	28,089	36,601	0	0	47,051	39,397	24	7	58,535	2
...	4,698	6,473	0	0	189,281	157,327	0	2	177,836	29
...	...	...	...	...	36,096	30,100	9	13	43,314	...
<i>Importing Countries:</i>										
Germany . . . (a)	194	101	41,727	41,679	2,134	8,847	217,972	161,249	9,780	241,314
Austria . . . (b)	754	496	3,435	3,047	5,770	7,207	24,756	21,590	9,681	31,656
Belgium . . . (a)	24	2	2,070	1,949	68	57	11,621	10,218	82	13,991
Denmark . . . (b)	6,407	862	20,444	13,627	64,527	7,031	138,834	74,311	18,715	116,939
Spain . . .	2,191	1,647	340	194	13,713	15,271	2,652	2,097	22,465	3,036
Finland . . .	15	22	441	331	165	137	3,631	3,025	157	4,409
France . . .	205	238	1,133	1,541	1,627	1,903	6,718	4,943	2,321	11,715
Gr. Brit. and N. Irel.	0	0	304	287	51	84	2,588	1,728	86	2,762
Greece . . .	3,803	3,508	61,317	53,641	24,868	32,532	396,800	250,627	45,631	393,116
Italy . . . (a)	44,234	39,055	111,497	100,778	280,376	201,527	689,231	619,133	315,628	886,010
Norway . . . (b)	13	42	15,975	12,950	439	77	1,479	1,634	300	2,094
Netherlands . . . (a)	229	86	915	161	2,430	1,182	10,997	10,565	1,620	14,290
Poland . . . (b)	231	115	1,041	708	562	529	1,457	1,579	756	2,355
Sweden . . .	163	33	525	613	1,706	1,345	6,332	5,141	1,933	7,229
Switzerland . . .	97	137	3,633	3,999	739	401	6,109	5,150	761	8,148
Czechoslovakia . . .	—	—	1,896	2,249	1,038	1,409	23,393	18,356	1,687	27,084
Yugoslavia . . .	4	11	2,743	1,803	176	364	12,251	12,593	397	17,745
Canada . . .	66	110	3,239	2,648	880	1,567	20,682	22,095	1,892	20,150
United States . . .	0	2	172	139	132	88	2,207	2,112	152	32,038
Japan . . .	0	90	791	346	2,804	4,034	6,113	4,883	5,159	2,957
Tunis . . .	35	112	6,140	4,186	394	734	37,047	75,709	3,893	6,277
Totals . . .	<b>187,899</b>	<b>213,865</b>	<b>304,315</b>	<b>273,568</b>	<b>1,900,517</b>	<b>1,652,130</b>	<b>1,922,433</b>	<b>1,558,075</b>	<b>2,133,391</b>	<b>2,281,324</b>

a) = Wool, greasy; b) = Wool, scoured. — 1) See notes page 418.

COUNTRIES	APRIL		TEN MONTHS (July 1-April 30)		TWELVE MONTHS (July 1-June 30)	COUNTRIES	APRIL		TEN MONTHS (July 1-April 30)		TWELVE MONTHS (July 1-June 30)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32
<b>Coffee. — (Thousand lb.).</b>						<b>Tea. — (Thousand lb.).</b>					
<b>EXPORTS.</b>						<b>EXPORTS</b>					
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
Brazil . . . . .	2,696	4,533	1,124,449	1,570,799	2,021,602	Ceylon . . . . .	6,603	5,456	178,833	163,806	245,982
India . . . . .	...	...	14,645	15,302	17,926	India . . . . .	...	...	345,329	314,634	342,950
Java and Madura . . . . .	...	...	73,650	37,615	51,725	Java and Madura . . . . .	...	...	125,450	120,831	163,312
						Japan . . . . .	765	414	24,973	21,341	24,590
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	35	119	1,105	1,484	1,649	Belgium . . . . .	0	0	7	20	22
Belgium . . . . .	15	231	362	9,288	9,643	Irish Free State . . . . .	7	42	26	254	258
France . . . . .	0	2	60	15	15	France . . . . .	0	2	13	33	35
Netherlands . . . . .	1,188	1,221	14,171	12,015	14,709	Gr. Britain and N. Irel. . . . .	4,085	7,388	69,854	74,792	80,092
Portugal . . . . .	176	150	1,720	1,023	1,270	Netherlands . . . . .	9	9	112	123	141
Switzerland . . . . .	22	66	278	586	613	United States . . . . .	18	42	269	445	474
Canada . . . . .	2	4	40	37	42	Syria and Lebanon . . . . .	0	2	0	7	20
United States . . . . .	838	2,937	10,007	20,426	22,593	Algeria . . . . .	2	13	31	44	49
Ceylon . . . . .	...	...	4	11	11	Union of S. Africa . . . . .	...	...	11	112	121
Syria and Lebanon . . . . .	2	26	11	37	46	Australia . . . . .	44	31	642	476	549
Australia . . . . .	2	7	37	46	55	New Zealand . . . . .	...	...	82	60	148
<b>Totals . . . . .</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>2,141,899</b>	<b>Totals . . . . .</b>	<b>11,533</b>	<b>13,399</b>	<b>745,532</b>	<b>696,979</b>	<b>858,743</b>
<b>IMPORTS.</b>						<b>IMPORTS</b>					
<i>Importing Countries:</i>						<i>Importing Countries:</i>					
Germany . . . . .	30,197	29,542	234,667	267,042	307,608	Germany . . . . .	961	897	8,695	9,114	10,494
Austria . . . . .	836	1,422	11,299	14,103	17,445	Austria . . . . .	46	79	833	952	1,131
Belgium . . . . .	5,066	4,387	82,184	106,065	114,687	Belgium . . . . .	31	44	516	584	661
Bulgaria . . . . .	49	165	668	1,354	1,658	Denmark . . . . .	99	123	1,078	1,120	1,380
Denmark . . . . .	5,368	4,919	39,139	56,624	66,439	Spain . . . . .	46	31	247	256	280
Spain . . . . .	3,545	5,324	35,263	43,623	48,019	Estonia . . . . .	4	35	60	157	172
Estonia . . . . .	7	46	71	251	298	Irish Free State . . . . .	2,293	2,654	19,392	22,234	25,122
Irish Free State . . . . .	60	84	456	452	522	Finland . . . . .	9	15	181	223	249
Ireland . . . . .	2,743	2,216	27,203	26,698	32,481	France . . . . .	254	328	2,703	2,881	3,419
France . . . . .	42,305	43,522	361,923	360,243	427,557	Gr. Britain and N. Ireland . . . . .	38,848	26,325	508,350	485,096	550,364
Gr. Britain and N. Ireland . . . . .	3,016	3,466	29,701	30,922	36,648	Greece . . . . .	20	53	315	584	699
Greece . . . . .	578	847	6,850	11,144	13,010	Hungary . . . . .	13	22	522	516	562
Hungary . . . . .	82	527	5,093	5,110	6,041	Italy . . . . .	15	24	214	273	333
Italy . . . . .	7,106	7,597	69,541	77,804	93,366	Latvia . . . . .	18	0	106	110	128
Latvia . . . . .	62	4	287	326	375	Lithuania . . . . .	15	15	106	104	119
Lithuania . . . . .	29	4	302	414	445	Norway . . . . .	35	33	335	335	386
Norway . . . . .	3,896	5,269	30,155	32,677	38,189	Netherlands . . . . .	1,645	2,540	26,054	25,300	30,836
Netherlands . . . . .	5,822	7,796	83,150	88,814	103,379	Poland . . . . .	320	357	3,236	3,812	4,317
Poland . . . . .	1,204	820	12,679	14,974	17,185	Portugal . . . . .	37	73	355	580	648
Portugal . . . . .	527	701	9,110	9,317	10,657	Sweden . . . . .	82	57	739	750	858
Sweden . . . . .	9,105	6,012	81,485	93,558	107,586	Switzerland . . . . .	84	165	1,903	1,499	1,792
Switzerland . . . . .	1,883	2,945	32,668	27,796	34,286	Czechoslovakia . . . . .	37	108	1,276	1,576	1,737
Czechoslovakia . . . . .	1,393	2,800	21,874	27,212	32,386	Yugoslavia . . . . .	15	46	381	571	622
Yugoslavia . . . . .	913	1,870	11,446	15,031	17,434	Canada . . . . .	891	1,373	35,958	37,055	39,031
Canada . . . . .	2,427	1,475	25,214	25,272	31,963	United States . . . . .	7,068	5,774	81,668	78,617	90,460
United States . . . . .	121,643	104,623	1,172,720	1,347,194	1,629,014	Chile . . . . .	157	425	3,422	4,689	5,170
Chile . . . . .	29	1,490	3,746	8,710	9,308	Syria and Lebanon . . . . .	9	11	183	470	586
Ceylon . . . . .	...	...	2,132	3,441	3,572	Turkey . . . . .	163	134	1,922	1,241	1,504
Japan . . . . .	452	417	3,501	4,497	6,724	Algeria . . . . .	271	234	3,530	2,132	10,421
Syria and Lebanon . . . . .	187	300	1,733	2,039	2,324	Egypt . . . . .	...	...	13,598	10,986	13,999
Turkey . . . . .	774	518	9,643	6,843	8,841	Tunis . . . . .	234	196	2,224	6,151	6,669
Algeria . . . . .	3,466	3,003	26,389	25,898	30,532	Union of S. Africa . . . . .	...	...	9,242	9,912	12,683
Egypt . . . . .	...	...	11,799	12,247	15,858	Australia . . . . .	3,463	3,336	41,046	37,298	44,899
Tunis . . . . .	287	337	2,930	2,685	3,190	New Zealand . . . . .	...	...	8,567	8,347	2,522
Un. of S. Africa . . . . .	...	...	21,087	20,920	26,026						
Australia . . . . .	353	300	2,522	2,381	3,510						
New Zealand . . . . .	...	...	238	299	452						
<i>Exporting Countries:</i>						<i>Exporting Countries:</i>					
India . . . . .	0	0	110	60	106	India . . . . .	269	313	5,176	5,858	6,486
						Java and Madura . . . . .	...	...	4,292	8,342	9,771
<b>Totals . . . . .</b>	<b>255,410</b>	<b>244,748</b>	<b>2,470,978</b>	<b>2,774,063</b>	<b>3,299,121</b>	<b>Totals . . . . .</b>	<b>57,452</b>	<b>45,820</b>	<b>788,425</b>	<b>769,725</b>	<b>880,508</b>

1) See notes page 418.

COUNTRIES	APRIL		SEVEN MONTHS (Oct. 1-April 30)		TWELVE MONTHS (Oct. 1- Sept. 30)	COUNTRIES	APRIL		NINE MONTHS (August 1-April 30)		TWELVE MONTHS (August 1- July 31)
	1933	1932	1932-33	1931-32	1931-32		1933	1932	1932-33	1931-32	1931-32
<b>Cacao. — (Thousand lb.).</b>						<b>Total Wheat and Flour *)</b>					
<b>EXPORTS.</b>						<b>a) NET EXPORTS.</b>					
<i>Exporting Countries.</i>						<i>Exporting Countries.</i>					
Grenada . . . . .	...	...	2) 3,042	2) 4,941	9,658	Germany . . . . .	4) 71	4) 536	871	4) 1,327	4) 5,915
Dominican Republ. . . . .	...	...	2) 13,036	2) 9,420	35,975	Bulgaria . . . . .	0	0	7	5) 7	4) 6,691
Brazil . . . . .	...	...	1) 143,241	1) 125,124	210,683	Spain . . . . .	97	388	3,201	9,354	10,752
Ecuador . . . . .	...	...	1) 5,498	1) 13,118	37,765	Hungary . . . . .	2	4	22	49	55
Trinidad . . . . .	...	...	1) 20,611	1) 21,352	39,617	Lithuania . . . . .	55	379	82	1,314	1,929
Venezuela . . . . .	...	...	3) 6,393	3) 2,590	35,439	Poland . . . . .	0	756	33	21,727	22,335
Ceylon . . . . .	...	...	1) 5,655	1) 7,030	9,266	Rumania . . . . .	...	...	1) 6,964	1) 6,39,683	6) 39,820
Java and Madura . . . . .	...	...	1) 1,323	1) 1,614	3,366	U. S. S. R. . . . .	...	...	4	791	571
Cameroon . . . . .	...	...	1) 26,850	1) 18,561	27,315	Yugoslavia . . . . .	3,287	5,176	120,968	89,173	123,625
Ivory Coast . . . . .	4,321	5,423	44,320	45,828	54,578	Canada . . . . .	564	6,546	16,222	53,663	65,566
Gold Coast . . . . .	34,679	25,395	387,512	389,849	462,878	United States . . . . .	9,573	12,838	53,002	69,278	83,679
Nigeria . . . . .	...	...	1) 124,820	1) 84,691	123,929	Argentina . . . . .	4) 4	4) 4	4) 26	4) 26	4) 46
St. Thomas and Prince Is. . . . .	...	...	3) 7,240	3) 10,000	25,867	India . . . . .	4) 84	4) 84	4) 904	4) 904	4) 1,118
Togoland . . . . .	...	...	1) 11,766	1) 12,031	13,916	Syria and Lebanon . . . . .	29	115	128	758	922
<i>Importing Countries.</i>						Turkey . . . . .	410	342	4,028	1,995	3,508
Germany . . . . .	0	0	44	459	496	Algeria . . . . .	75	223	2,388	1,825	5,104
Belgium . . . . .	0	115	459	644	1,508	Australia . . . . .	6,878	9,337	72,665	70,039	92,453
France . . . . .	2	0	62	2	4	<b>Totals . . . . .</b>	<b>21,045</b>	<b>37,519</b>	<b>284,979</b>	<b>373,937</b>	<b>466,538</b>
Netherlands . . . . .	434	379	2,028	4,385	6,740	<b>b) NET IMPORTS.</b>					
United States . . . . .	937	855	6,517	5,038	7,011	<i>Importing Countries.</i>					
Australia . . . . .	20	22	22	139	143	Germany . . . . .	514	805	5) 5,084	5,084	13,913
<b>Totals . . . . .</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>—</b>	<b>1,106,154</b>	Austria . . . . .	575	542	5,434	6,160	8,113
<b>IMPORTS.</b>						Belgium . . . . .	2,410	2,269	18,078	19,370	27,862
<i>Importing Countries.</i>						Denmark . . . . .	423	483	5,673	8,453	10,412
Germany . . . . .	12,474	16,947	106,296	124,138	175,744	Spain . . . . .	5) 5) 5) 15	5) 15	5) 15	5) 15	5) 15
Austria . . . . .	470	1,230	4,654	8,239	13,651	Estonia . . . . .	0	35	0	225	262
Belgium . . . . .	1,847	3,836	10,816	15,867	21,588	Irish Free State . . . . .	983	1,120	8,080	8,865	11,715
Bulgaria . . . . .	137	73	441	754	1,323	Finland . . . . .	174	130	1,870	1,944	2,555
Denmark . . . . .	527	677	4,449	4,597	7,756	France . . . . .	897	5,816	15,377	29,344	47,137
Spain . . . . .	2,330	3,053	14,257	13,186	19,701	Gr. Brit. and N. Irel. . . . .	12,079	10,421	95,908	111,100	143,918
Estonia . . . . .	31	7	203	381	452	Greece . . . . .	642	1,208	8,777	10,767	14,204
Irish Free State . . . . .	463	66	2,002	871	1,149	Italy . . . . .	807	3,510	5,490	10,223	19,930
Finland . . . . .	7	7	132	115	181	Latvia . . . . .	0	20	15	366	575
France . . . . .	8,748	9,275	58,850	55,493	91,214	Norway . . . . .	494	461	3,486	4,303	5,090
Gr. Brit. and N. Irel. . . . .	11,903	15,130	98,875	92,828	138,407	Netherlands . . . . .	1,191	1,327	12,064	14,147	18,636
Greece . . . . .	97	168	1,431	2,152	2,844	Portugal . . . . .	108	24	677	664	1,660
Hungary . . . . .	419	392	3,889	3,532	5,573	Sweden . . . . .	121	406	1,693	3,009	4,096
Italy . . . . .	1,402	1,074	10,139	9,273	15,053	Switzerland . . . . .	6) 871	6) 911	6) 8,913	6) 9,855	6) 12,666
Latvia . . . . .	247	106	723	1,038	1,607	Czechoslovakia . . . . .	611	1,116	2,782	11,263	14,758
Lithuania . . . . .	20	60	406	357	615	Chile . . . . .	159	5) 992	5) 992	5) 992	5) 992
Norway . . . . .	141	717	2,906	4,004	5,033	Ceylon . . . . .	...	...	1) 368	1) 408	542
Netherlands . . . . .	5,772	8,565	65,125	65,636	92,202	India . . . . .	29	5) 44	5) 44	5) 44	518
Poland . . . . .	1,204	1,041	8,142	7,077	11,444	Indo-China . . . . .	35	273	1,239	2,222	9,255
Portugal . . . . .	82	53	633	600	855	Japan . . . . .	...	...	1) 911	1) 1,052	1,497
Sweden . . . . .	617	1,885	5,542	8,148	10,481	Java and Madura . . . . .	...	...	1) 106	1) 628	223
Switzerland . . . . .	1,537	1,574	11,594	8,124	11,197	Syria and Lebanon . . . . .	...	...	1) 229	1) 3,435	4,231
Czechoslovakia . . . . .	1,825	2,760	11,449	11,574	21,526	Egypt . . . . .	...	...	1) 150	1) 858	1,049
Yugoslavia . . . . .	152	582	10,401	9,059	16,444	Union of S. Africa . . . . .	...	...	1) 915	1) 302	569
Canada . . . . .	1,157	582	318,247	295,315	420,143	New Zealand . . . . .	...	...	...	...	...
United States . . . . .	45,526	35,775	1,131	1,131	1,960						
Japan . . . . .	225	223	8,367	6,607	11,252						
Australia . . . . .	251	465	1,321	729	1,554						
New Zealand . . . . .	...	...	...	...	...						
<b>Totals . . . . .</b>	<b>99,611</b>	<b>105,911</b>	<b>763,420</b>	<b>751,961</b>	<b>1,102,450</b>	<b>Totals . . . . .</b>	<b>23,590</b>	<b>31,993</b>	<b>201,493</b>	<b>270,875</b>	<b>385,172</b>

\*) Flour reduced to grain on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain.

a) Excess of exports over imports. — b) Excess of imports over exports.

1) Data up to 31 March. — 2) Data up to 28 February. — 3) Data up to 31 December. — 4) See Net Imports. — 5) See Net Exports. — 6) Wheat only.

## STOCKS

## COMMERCIAL CEREALS IN STORE IN CANADA AND THE UNITED STATES.

SPECIFICATION	Friday or Saturday nearest to 1st of month					Friday or Saturday nearest to 1st of month				
	June 1933	May 1933	April 1933	June 1932	June 1931	June 1933	May 1933	April 1933	June 1932	June 1931
	1,000 centals					1,000 bushels				
<b>WHEAT:</b>										
Canadian in Canada . . . .	122,554	131,884	135,317	85,229	75,960	203,424	219,807	225,529	142,049	126,601
U. S. in Canada . . . . .	2,881	3,230	3,842	10,952	4,711	4,802	5,348	6,403	18,058	7,851
U. S. in the United States . .	70,522	74,637	81,331	104,471	125,466	117,536	124,395	135,552	174,118	209,110
Canad. in the United States .	2,765	1,498	3,595	4,322	3,566	4,609	2,497	5,992	7,203	5,926
Total . . .	198,222	211,249	224,085	204,974	209,693	330,371	352,083	373,476	341,624	349,488
<b>RYE:</b>										
Canadian in Canada . . . .	2,835	2,895	2,873	5,400	7,032	5,062	5,169	5,131	9,642	12,557
U. S. in Canada . . . . .	1	55	55	127	1,070	1	99	99	226	1,911
U. S. in the United States . .	4,931	4,483	4,305	5,273	5,936	8,806	8,006	7,688	9,416	10,599
Canad. in the United States .	119	304	304	336	1	213	543	543	600	2
Total . . .	7,886	7,737	7,537	11,136	14,039	14,082	13,817	13,461	19,884	25,069
<b>BARLEY:</b>										
Canadian in Canada . . . .	3,158	3,122	3,265	3,083	7,145	6,580	6,505	6,802	6,423	14,886
U. S. in Canada . . . . .	10	10	10	43	33	21	21	21	89	68
U. S. in the United States . .	5,847	4,608	4,727	1,442	2,991	12,181	9,599	9,848	3,005	6,232
Canad. in the United States .	0	0	0	136	301	0	0	0	283	627
Total . . .	9,015	7,740	8,002	4,704	10,470	18,782	16,125	16,671	9,800	21,813
<b>OATS* (1)</b>										
Canadian in Canada . . . .	3,334	3,638	4,132	2,191	3,605	10,419	11,369	12,911	6,846	11,264
U. S. in Canada . . . . .	144	108	54	54	318	449	336	168	169	995
U. S. in the United States . .	7,667	7,001	7,742	3,607	3,098	23,959	21,878	24,195	11,272	9,681
Canad. in the United States .	0	0	0	0	76	0	0	0	0	238
Total . . .	11,145	10,747	11,928	5,852	7,097	34,827	33,583	37,274	18,287	22,178
<b>MAIZE:</b>										
U. S. in Canada . . . . .	1,589	777	875	621	557	2,837	1,387	1,562	1,109	995
Of other origin in Canada . .	623	724	916	660	299	1,113	1,293	1,635	1,178	535
U. S. in the United States . .	21,716	17,896	20,245	11,596	6,909	38,779	31,958	36,151	20,708	12,337
Total . . .	23,928	19,397	22,036	12,877	7,765	42,729	34,638	39,348	22,995	13,867

1) For oats the bushel is of 32 lbs.

## QUANTITIES OF CEREALS ON OCEAN PASSAGE WITH FIRST DESTINATION FOR EUROPE.

PRODUCTS	Saturday nearest to 1st of month					Saturday nearest to 1st of month				
	June 1933	May 1933	April 1933	June 1932	June 1931	June 1933	May 1933	April 1933	June 1932	June 1931
	1,000 centals					1,000 bushels				
Wheat (and flour in terms of wheat)	23,669	25,528	31,435	37,886	36,216	39,448	40,880	52,392	63,144	60,360
Rye . . . . .	701	893	614	1,603	979	1,251	1,594	1,097	2,863	1,749
Barley . . . . .	1,140	1,948	2,272	2,348	4,424	2,375	4,058	4,733	4,892	9,217
Oats . . . . .	928	995	1,843	2,906	1,981	2,900	3,110	5,760	9,080	6,190
Maize . . . . .	14,414	10,522	7,978	18,547	16,003	25,740	18,789	14,246	33,120	28,577

Authority: Broomhall's Corn Trade News.



## STOCKS (TOTAL AND QUANTITIES FOR SALE) IN FARMERS' HANDS IN GERMANY.

PRODUCTS	% Total stocks: total production				% Quantities intended for sale: total production			
	15 May 1933	15 April 1933	15 May 1932	15 May 1931	15 May 1933	15 April 1933	15 May 1932	15 May 1931
Winter wheat . . . . .	12.7	21.3	5.9	4.7	9.7	17.1	3.9	2.4
Spring wheat . . . . .	16.5	30.3	9.4	6.9	13.6	26.0	7.4	5.0
Winter rye . . . . .	13.8	20.8	8.4	11.7	6.0	9.7	2.0	4.0
Winter barley . . . . .	6.4	9.1	4.5	4.9	1.0	1.3	0.4	0.5
Spring barley . . . . .	6.6	12.2	7.6	4.2	1.1	3.8	2.5	0.3
Oats . . . . .	23.3	32.3	19.1	21.3	3.3	4.9	2.6	3.0
Potatoes . . . . .	10.5	23.9	8.4	8.6	1.8	5.4	1.2	0.5

Authority: Preisberichtsstelle beim Deutschen Landwirtschaftsrat.

## STOCKS OF CEREALS IN COMMERCIAL ELEVATORS AND MILLS IN GERMANY 1).

PRODUCTS	Last day of the month				Last day of the month			
	May 1933	April 1933	March 1933	May 1932	May 1933	April 1933	March 1933	May 1932
	1,000 centals				1,000 bushels or barrels			
<b>WHEAT:</b>								
Grain . . . . .	12,833	14,339	15,245	8,905	21,388	23,898	25,408	14,841
Flour for bread . . . .	2,531	2,743	3,089	2,606	1,291	1,399	1,576	1,330
TOTAL 2) . . . .	16,208	17,996	19,363	12,380	27,011	29,991	32,272	20,634
<b>RYE:</b>								
Grain . . . . .	11,510	13,237	13,761	7,608	20,554	23,637	24,574	13,586
Flour for bread . . . .	1,323	1,455	1,605	1,235	675	742	819	630
TOTAL 2) . . . .	13,274	15,177	15,902	9,255	23,704	27,100	28,396	16,526
<b>BARLEY</b> . . . . .	1,543	2,033	2,447	1,561	3,215	4,235	5,098	3,252
<b>OATS</b> . . . . .	1,559	1,898	2,266	1,442	4,871	5,932	7,082	4,506

1) See note under the corresponding table in the Bulletin for March, 1932 on page 218. — 2) Including flour in terms of grain, on the basis of the coefficient: 1,000 centals of flour = 1,333.33 centals of grain (1,000 barrels of flour = 4,355.55 bushels of wheat or 4,584.80 bushels of rye).

## GRAIN AND FLOUR STOCKS AT THE PORTS OF GREAT BRITAIN AND IRELAND 1).

PRODUCTS	First of the month					First of the month				
	June 1933	May 1933	April 1933	June 1932	June 1931	June 1933	May 1933	April 1933	June 1932	June 1931
	1,000 centals					1,000 bushels				
<b>WHEAT:</b>										
Grain . . . . .	7,104	6,864	5,400	6,048	3,624	11,880	11,440	9,000	10,080	6,040
Flour as grain . . . .	744	672	624	720	720	1,240	1,120	1,040	1,200	1,200
TOTAL . . . . .	7,848	7,536	6,024	6,768	4,344	13,080	12,560	10,040	11,280	7,240
<b>Barley.</b> . . . . .	880	880	820	680	460	1,833	1,833	1,708	1,417	958
<b>Oats</b> . . . . .	512	576	448	432	512	1,600	1,800	1,400	1,350	1,600
<b>Maize</b> . . . . .	1,368	1,608	2,232	2,256	1,968	2,443	2,871	3,986	4,028	3,514

1) Imported cereals.

Authority: Broomhall's Corn Trade News.

## STOCKS OF COTTON ON HAND IN THE UNITED-STATES.

LOCATION	Last day of the month					Last day of the month				
	May 1933	April 1933	March 1933	May 1932	May 1931	May 1933	April 1933	March 1933	May 1932	May 1931
	1,000 centals					1,000 bales (counting round as half bales)				
In consuming establishments . . .	6,856	6,723	6,600	7,193	6,087	1,395	1,368	1,343	1,463	1,258
In public storage and at compresses . .	36,014	40,102	43,811	37,430	26,591	7,321	8,152	8,906	7,607	5,490
TOTAL . .	42,870	46,825	50,411	44,623	32,678	8,716	9,520	10,249	9,070	6,748

## STOCKS OF COTTON AT BOMBAY AND AT ALEXANDRIA.

PORTS	Thursday nearest to 1st of month					Thursday nearest to 1st of month				
	June 1933	May 1933	April 1933	June 1932	June 1931	June 1933	May 1933	April 1933	June 1932	June 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs.)				
Bombay 1) . . . .	3,824	3,697	3,152	3,396	7,789	800	773	659	710	793
Alexandria . . . .	4,214	3,611	3,778	4,378	4,470	882	755	790	916	998

1) Stocks held by exporters, dealers and mills.

Authorities: *East Indian Cotton Ass.* and *Commission de la Bourse de Minet-al-Basal.*

## STOCKS OF COTTON IN EUROPE.

COUNTRIES, PORTS, DESCRIPTIONS	Thursday or Friday nearest to 1st of month					Thursday or Friday nearest to 1st of month				
	June 1933	May 1933	April 1933	June 1932	June 1931	June 1933	May 1933	April 1933	June 1932	June 1931
	1,000 centals					1,000 bales (1 bale = 478 lbs.)				
<i>Great Britain:</i>										
American . . . .	1,935	2,230	2,451	2,008	2,455	405	467	513	420	514
Argentine, Brazilian, etc. . . .	79	88	106	28	189	16	18	22	6	39
Peruvian, etc. . .	146	172	209	137	225	31	36	44	29	47
East Indian, etc.	284	286	283	411	814	59	60	59	86	170
Egyptian, Sudanese . . . .	1,258	1,246	1,302	1,823	1,348	263	261	272	381	282
Other 1) . . . .	182	140	89	113	233	38	29	19	24	49
TOTAL . . . .	3,884	4,162	4,440	4,520	5,264	812	871	929	946	1,101
<i>Bremen:</i>										
American . . . .	2,407	2,526	2,601	1,579	2,176	503	528	544	330	455
Other . . . .	75	85	79	28	53	16	18	17	6	11
TOTAL . . . .	2,482	2,611	2,680	1,606	2,229	519	546	561	336	466
<i>Le Havre:</i>										
American . . . .	963	1,138	1,255	801	1,557	201	238	262	168	326
Other . . . .	38	35	31	61	159	7	7	7	13	33
TOTAL . . . .	1,001	1,173	1,286	862	1,716	208	245	269	181	359
<i>Total Continent 2):</i>										
American . . . .	4,254	4,673	4,769	3,217	4,354	890	978	998	673	911
Argentine, Brazilian, etc. . . .	21	20	13	30	107	4	4	3	6	23
E. Indian, Australian, etc. . . .	166	160	157	66	231	35	33	33	14	48
Egyptian . . . .	118	118	117	123	101	25	25	24	20	21
W. Indian, W. African, E. African, etc. . . .	31	29	31	32	49	6	6	6	7	10
TOTAL . . . .	4,590	5,000	5,087	3,468	4,842	960	1,046	1,064	726	1,013

1) Includes: W. Indian, etc., E. African, etc.; W. African, and Australian. — 2) Includes Bremen, Le Havre, and other Continental ports.  
Authority: *Liverpool Cotton Ass.*

## MONTHLY REVIEW OF PRICES

(All quotations are, unless otherwise, for spots)

PRODUCTS, MARKETS AND DESCRIPTION	16	9	2	26	AVERAGE 1)				Commercial Season	
	June	June	June	May	May	June	June	June		
	1933	1933	1933	1933	1933	1932	1931	1931	1931-32	1930-31
<b>WHEAT.</b>										
Budapest (a): Tisza region (78 kg. p. hl.; pengő p. quintal) . . . . .	13.02	13.47	13.47	12.55	71 13.34	12.34	14 79	12.28	15.34	
Bralla: Good quality (lei p. quintal) 2) . . . . .	n. q.	610	n. q.	570	570	329	310	305	351	
Winnipeg: No. 1 Manitoba (cents p. 60 lbs.) . . . . .	63 7/8	63 1/2	63 3/4	62 1/4	64	55 7/8	61	59 1/4	64 1/4	
Chicago: No. 2 Hard Winter (cents p. 60 lbs.) . . . . .	n 73 1/4	n. 74 1/2	n. 73	72 1/4	73 1/2	n. 51 1/4	n 75	54 1/4	78	
Minneapolis: No. 1 Northern (cents p. 60 lbs.) . . . . .	75	76 1/4	74 3/4	73 1/4	74 1/4	57 1/4	74 1/4	66 1/4	77 1/4	
New-York: No. 2 Hard Winter (cents p. 60 lbs.) . . . . .	84 7/8	86 1/4	84 1/2	82 1/4	84	64 1/4	n. q.	66 1/4	n. 91 1/4	
Buenos Aires (b); Barletta (80 kg. p. hectol.; pesos paper p. quintal) . . . . .	5.80	5.80	5.90	5.90	5.89	6.82	5.96	6.68	6.83	
Karachi: Karachi white, 2 % barley, 1 1/2 % dirt (rupees p. 65 lbs.) . . . . .	25-12-0	25-8-0	26-0-0	26-6-0	25-8-6	22-14-3	16-14-0	21-15-9	19-15-2	
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	19 30	19 30	19 40	19 40	19.72	25.87	27.20	23.63	26.00	
Hamburg, c. i. f. (Reichsmarks p. quintal):										
No. 4 Manitoba . . . . .	8.85	8.70	8.98	8.89	9.00	9.26	11.09	10.38	12.65	
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. 9.35	—	n. 9.32	n. 13.00	
Barusso 3) . . . . .	7 53	7 47	7 53	7 49	7.51	8.72	9 29	8.78	11.10	
Antwerp (francs p. quintal):										
Home grown . . . . .	84 00	85 00	85 00	84 00	83 00	85 30	95 00	83 10	95 50	
No 2 Hard Winter, Gulf 4) . . . . .	80 00	81 00	81 50	82 00	81 75	82 50	92 00	81 75	112 50	
Paris: Home-grown, 75-77 kg. (francs p. quintal) . . . . .	85 25	89 50	93 25	97 85	97 55	170 50	188 10	167 10	175 00	
London: Home grown (shillings p. 104 lbs.) . . . . .	28 -	28 -	27 6	26 9	25 6	28 1	26 4	26 5	27 1	
London and Liverpool, c. i. f., parcels, shipping current month (shillings p. 480 lbs.):										
South Russian (on sample) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	22 1	22 3	23 7	
No. 3 Manitoba . . . . .	25 3	24 9	25 9	25 4 1/2	26 1	24 -	21 11	25 9	25 4	
No. 2 Hard Winter . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	24 8	8) 21 11	25 3	26 4	
White Pacific . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	26 -	22 9	26 5	26 7	
Rosafe (afloat) 5) . . . . .	22 -	21 9	22 3	21 9	22 0 1/2	24 -	20 1	23 8	23 5	
Choice White Karacu . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	22 7	n. q.	27 -	
Australan . . . . .	25 6	25 3	26 -	25 3	25 2 1/4	25 3	22 7	25 9	25 7	
Milan (a) Home-grown, soft, "Buono mercantile" (76-78 kg. p. hl; lire p. quintal) . . . . .	90 00	90 00	89 00	89 00	94 75	112 75	107 50	106 20	109 10	
Genoa c. i. f.: Plate (shillings p. metric ton) 6) . . . . .	n q	n q	n. q.	n. q.	n. 1.93	n. 2.10	95 4	n. 2.21	110 -	
<b>RYE.</b>										
Budapest (a): Home-grown (pengo p. quintal) . . . . .	5.35	5 90	6.07	6 00	9) 6 22	12.57	13 64	12.24	10.79	
Berlin: Home-grown (Reichsmarks p. quintal) . . . . .	15.30	15 40	15 40	15 40	15.47	19.00	20 42	19.00	17.18	
Hamburg, c. i. f. (Reichsmarks p. quintal):										
Russian (72-73 kg. p. hl.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 9.50	n. q.	
La Plata (74-75 kg. p. hl.) . . . . .	10) 5 70	10) 5 72	10) 5 78	10) 5 87	10) 5 95	7 38	10) 7 91	8 36	7 65	
Minneapolis: No. 2 (cents p. 56 lbs.) . . . . .	58	57 1/2	57	54	52 1/4	32 1/2	36 1/2	42 1/4	42 1/4	
Groningen (c): Home-grown (florins p. quintal) . . . . .	3.55	3 60	3 65	3 65	3.73	5 91	4 30	5 13	4 45	
<b>BARLEY.</b>										
Bralla: Average quality (lei p. quintal) 2) . . . . .	167	161	164	160	164	262	283	263	232	
Winnipeg: No. 4 Western (cents p. 48 lbs.) . . . . .	33	33 3/4	34 3/4	34 1/4	33 7/8	34 1/4	31 3/4	34 1/4	26 1/4	
Chicago: Feeding (cents p. 48 lbs.) . . . . .	36	30 1/2	36	36	46 1/4	35 1/2	36 1/4	43 1/4	43 1/4	
Minneapolis: Feeding, "lower grades" (cents per 48 lbs.) . . . . .	31	30 1/2	31	30	32	30 1/2	32 1/4	38 1/4	37 1/4	
Berlin: Home-grown fodder (Reichsmarks per quintal) . . . . .	17.00	17.00	16.90	16.90	17.09	17.04	20 36	16.41	19.52	
Antwerp: Danubian (francs p. quintal) . . . . .	52 00	53 00	53 50	53 50	52 60	78 00	79 00	77 25	73 25	
London: English malting (shillings p. 448 lbs.) . . . . .	n. q.	27 6	30 -	30 -	30 -	n. q.	32 6	39 4	35 8	
London and Liverpool, c. i. f., parcels (shillings per 400 lbs.):										
Danubian 3 % . . . . .	15 15 1/2	15 15 1/2	15 -	15 15 1/2	15 3	n. q.	11 15 1/2	n. q.	15 2	
Russian (Azoff-Black sea) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. 18 6	11 15 1/2	18 11	14 3	
Canadian Western, N. 3 . . . . .	17 4 1/4	17 1 1/2	17 9	17 4 1/4	17 5 1/4	19 10	16 2	20 11	15 11	
Canadian malting (shillings p. 448 lbs.) . . . . .	23 6	23 6	23 6	23 6	24 2	24 -	32 6	33 4	27 8	
Groningen (c): Home grown winter (fl. p. quintal) . . . . .	3.60	3.75	3.70	3.75	3.76	6.60	5.41	5.87	4.97	

n. q. = not quoted. — n. = nominal — a) Saturday prices. — b) Thursday prices. — c) Prices of preceding Tuesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) From 20 January to 17 March quotations for Costanza. — 3) August-Dec. 1930 78 kg. p. hl.; Jan. 1931 - Jan. 1932: 79 kg.; Feb-Dec. 1932: 80 kg.; afterwards: 79 kg. — 4) From July 1931: No. 1 Hard Winter, Gulf. — 5) August-Nov. 1930: 62 1/4 lbs. per bushel; Dec. 1930 - Feb. 1931: 63 1/4 lbs.; March - Nov. 1931: 63 lbs.; Dec. 1931: 63 1/4 lbs.; Jan.-Dec. 1932: 64 lbs.; afterwards 63 1/4 lbs. — 6) From April 1932 dollars p. quintal. — 7) 19 May: 13.22; 12 May: 13.60; 5 May: 14.00; 28 April: 14.52; 21 April: 14.87; 14 April: 14.67; average April: 14.63. — 8) Hard Winter on sample — 9) 19 May: 6.27; 12 May: 6.30; 5 May: 6.30, 28 April: 6.70, 21 April: 6.80; 14 April: 6.97; average April: 6.92. — 10) 72-73 kg. p. hl. — 11) Shipping August-Sept.

PRODUCTS, MARKETS AND DESCRIPTION	16	9	2	26	AVERAGE 1)				Commercial	
	June	June	June	May	May	June	June	Season		
	1933	1933	1933	1933	1933	1932	1931	1931-32	1930-31	
OATS.										
Braila: Good quality (1c1 p. quintal) 2) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	282	350	285	247	
Winnipeg: No. 2 White (cents per 34 lbs.) . . . . .	26 7/8	27 1/2	27 1/2	27 1/2	28 1/8	36	30	31 1/8	30	
Chicago: No. 2 White (cents per 32 lbs.) . . . . .	28 1/2	27	25 1/2	25	26 1/8	22 1/4	27 1/8	24 1/8	32 1/8	
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	3.95	4.00	4.10	4 07 1/2	4.08	5.46	3.86	5.33	3.58	
Berlin: Home grown (Reichsmarks p. quintal) . . . . .	13.85	13.70	13.70	13.50	13.45	16.07	17.64	15.10	16.17	
Paris: Home grown, black and other (francs p. quintal) . . . . .	59.25	62.25	62.00	64.75	66 10	112.45	88.60	101.75	81.00	
London: Home grown white (shillings p. 336 lbs.). London and Liverpool c. i. f., parcels (shillings p. 320 lbs.)	18/-	18/-	18/-	18/-	18/-	24/6	20/6	21/3	18/4	
Danubian (39-40 lbs.) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. 12/1	
Plate (f. a. q.) . . . . .	11/6	11/9	11/9	11/9	11/11	14/2	10/7	14/5	10/9	
Chilian Tawny . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	11/11	n. 16/-	12/-	
Milan (b): spot (lire p. quintal):										
Home grown . . . . .	52.50	53.50	53.50	52.00	55.10	n. 73.50	70.00	73.60	74.00	
Foreign imported . . . . .	49.00	49.00	49.00	48.00	49.75	64.00	61 00	65.20	60.40	
MAIZE.										
Braila: Danubian (1c1 p. quintal) 2) . . . . .	150	146	146	150	151	193	247	187	210	
Chicago: No. 2 Mixed American (cents p. 56 lbs.). Buenos Aires (a): Yellow Plate (pesos paper p. quintal) . . . . .	42 1/2	42 1/2	44 1/2	43 1/2	43 1/2	31 1/4	57	34	58 1/4	
Antwerp, spot (francs p. quintal):	3.82 1/2	3.80	3.87 1/2	3.85	3.94	4.62	3.82	4.63	3.82	
Bessarabian . . . . .	47.00	47.00	47.00	48.00	48.35	n. q.	73.50	n. q.	71.25	
Argentine Cinquantino . . . . .	69 50	70.00	72.00	74.50	72.85	65.25	70 50	63.30	81.00	
Yellow Plate . . . . .	47.00	50.00	50.00	51.00	53.35	57.10	63.50	57.20	65.00	
London and Liverpool, parcels, c. i. f. (shillings p. 480 lbs.):										
Danubian . . . . .	16/-	15/9	15/1 1/2	16/4 1/2	n. 16/6	18/9	n. q.	n. 19/3	n. 17/4	
Yellow Plate . . . . .	16/-	16/-	16/1 1/2	16/4 1/2	16/8 1/2	17/6	14/10	18/2	15/6	
No. 2 White African . . . . .	n. q.	n. q.	17/1 1/2	17/-	n. 17/-	n. q.	n. q.	n. 20/11	n. 18/1	
Milan (b): Home grown (lire p. quintal) . . . . .	50.00	51.00	51 00	51.00	51.00	73.50	52 50	68.70	51.90	
RICE (CLEANED).										
								1932	1931	
Milan (b). Maratelli (lire p. quintal) . . . . .	162.50	152.50	142 50	142.50	140 60	155.00	115.60	151.25	117.35	
Rangoon. No. 2 Burma (rupees p. 7500 lbs.) . . . . .	205	197 1/2	195	197 1/2	197 1/2	276 7/8	207	268 7/8	249 1/4	
Saigon (Indo-chinese piastres p. quintal):										
No. 1 Round white (25 % broken) . . . . .	...	...	...	...	4) ...	5.87	5.52	5.48	6.73	
No. 2 Japan (40 % broken) . . . . .	...	...	...	...	5) ...	5.45	5.03	5.11	6.20	
London (a) c. i. f. (shillings p. 112 lbs.).										
Spanish Belloch, No. 3 oiled . . . . .	n. q.	n. q.	n. q.	n. q.	n. 12/1	13/8	12/5	13/8	11/11	
Italian good, No. 6 oiled . . . . .	14/6	10/-	9/6	8/4 1/2	8/10 1/2	14/5	15/3	14/-	13/7	
American Blue Rose . . . . .	17/6	18/-	18/-	17/6	17/4 1/2	15/9	18/1	17/1 1/2	18/7	
Burma, No. 2 . . . . .	7/-	6/9	6/7 1/2	6/4 1/2	6/5	8/1	6/9	8/4	7/11	
Saigon, No. 1 3) . . . . .	7/1 1/2	7/-	7/1 1/2	6 7/2	6/7	8/4	6/8	8/5	8/1	
Siam, Garden No. 1 3) . . . . .	9/3	8/10 1/2	8/7 1/2	8 4/2	8/3	9/-	7/11	9/4 1/2	9/5	
Tokio: Chumai (brown Japanese, average quality; yens p.koku) . . . . .	21.70	21.60	21.70	21.40	21.62	21.80	18.32	21.20	18.46	
LINSBED.										
Buenos Aires (a): Current quality (pesos paper p. quintal) . . . . .	11.27 1/2	10.85	11.20	10.45	10.20 1/2	8.65	10.62	9.22	10.82	
Antwerp: Plate (francs p. quintal) . . . . .	120.00	115.00	114.00	109.50	107.10	97.50	144.50	103.25	146.00	
London, c. i. f. (t. p. long ton):										
La Plata (delivery Hull) . . . . .	10- 2-6	10- 0-0	10- 2-6	9-10-0	9- 5-11	7-10-7	8- 7-6	8- 8-4	8-14-1	
Bombay bold . . . . .	11-10-0	11-10-0	11-15-0	11- 7-6	11- 2-2	10- 5-7	11-6-10	11-10-0	11- 9-6	
Duluth: No. 1 Northern (cents p. 56 lbs.) . . . . .	169 1/4	159 1/2	161 1/2	149	144 1/4	107 1/2	149 1/2	118 1/4	148	

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Saturday prices.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) 20 Jan.-17 March: quotations for Costanza. — 3) From January 1932; Siam, Special. — 4) 19 May: 4.07; 12 May: 4.15; 5 May: 4.00; 28 April: 4.15; 21 April: 4.23; average April: 4.00. — 5) 19 May: 3.90; 12 May: 3.99; 5 May: 3.84; 23 April: 3.99; 21 April: 4.07; average April: 3.85. — 6) July delivery.

PRODUCTS, MARKETS AND DESCRIPTION	16	9	2	26	AVERAGE 1)				Commercial Season	
	June	June	June	May	May	June	June			
	1933	1933	1933	1933	1933	1932	1931		1931-32	1930-31
<b>COTTON*RED.</b>										
Alexandria: Sakellaridis (piastres per ardeb)	58.3	58.4	61.4	57.7	62.0	51.8	46.7	60.0	52.2	
London: sakellaridis (delivery Hull: £ p. l. ton)	6-1-3	6-7-6	6-8-9	6-5-0	6-10-4	5-5-7	5-0-0	6-3-7	5-12-6	
<b>COTTON.</b>										
New Orleans: Middling (cents per lb.)	9.07	9.13	9.15	8.85	8.64	5.15	8.91	6.20	10.07	
New York: Middling (cents per lb.)	9.25	9.25	9.25	9.00	8.75	5.20	9.12	6.35	10.38	
Bombay: M. g. Broach f. g. (rupees per 784 lbs.)	206	210	219	206	199 1/4	156	175	181 1/4	191 1/4	
Alexandria (talaris per kantar):										
Sakellaridis f. g. f.	14.95	14.75	15.40	14.65	14.55	10.51	13.47	12.17	17.12	
Ashmuni-Zagora f. g. f.	13.12	13.07	13.52	12.78	12.86	8.92	10.07	9.73	12.00	
Bremen: Middling (U. S. cents per lb.)	10.95	10.46	10.52	9.86	9.88	6.30	10.18	7.44	11.59	
M. g. Broach fully good (pence per lb.)	n. 4.95	n. 5.00	n. 5.20	n. 4.80	n. 4.74	n. 3.85	n. 4.20	n. 4.48	n. 4.63	
Le Havre: Middling, Gulf (frances per 50 kg.)	255.00	252.00	266.00	258.00	254.00	186.00	307.00	216.00	348.00	
Liverpool (pence per lb.):										
Middling fair	n. 7.38	n. 7.32	n. 7.57	n. 7.27	n. 7.23	n. 5.19	n. 6.13	n. 5.85	n. 6.93	
Middling	6.18	6.12	6.37	6.07	6.03	4.23	4.93	4.79	5.72	
São Paulo, good fair	n. 6.43	n. 6.37	n. 6.62	n. 6.32	n. 6.29	n. 4.44	n. 5.13	n. 4.98	5.91	
M. g. Broach, fully good	n. 5.24	n. 5.17	n. 5.42	n. 5.10	n. 5.16	n. 3.77	n. 4.00	n. 4.34	n. 4.25	
Sakellaridis, fully good fair	8.30	8.26	8.54	8.17	8.07	5.87	7.71	6.76	9.08	
<b>BUTTER.</b>										
								1932	1931	
Copenhagen (a) Danish (Crs. p. quintal)	148.00	148.00	140.00	140.00	149.50	146.00	192.00	178.70	209.00	
Leeuwarden, Commission for the Dutch butter quotations: (florins per kg.)	0.52	0.52	0.50	0.50	0.52	1.11	1.28	0.94	1.34	
Maastricht, auction (b): Dutch (florins p. kg.) 2)	1.54	1.54	1.52	1.53	1.54 1/2	1.07	1.35	1.27	1.38	
Hamburg, auction (c): Schleswig-Holstein butter, with quality mark (R. M. per 50 kg.)	113.20	112.41	110.45	119.39	109.61	108.38	123.28	115.83	131.22	
Kempten (c): Allgäu butter (Pfennige p. half kg.) 3)	108	115	120	109 1/4	102	105	107	110	110	
London (d) (shillings p. cwt.):										
British blended	116.8	116/8	116/8	116/8	114/5	130/8	140/-	131/6	140/4	
Danish	95	95/-	95/-	99/-	98/10	107/2	122/-	123/2	133/4	
Irish creamery, salted	85/-	85/-	85/-	86/-	n. 83/-	104/8	118/6	n. 111/-	119/5	
Dutch	99/-	99/-	99/-	102/-	101/3	112/3	117/6	n. 115/10	132/1	
Argentine	78/-	78/-	78/-	78/-	74/10	99/7	117/-	103/9	117/7	
Siberian 4)	n. q.	n. q.	n. q.	n. q.	n. 70/4	n. q.	107/6	n. 93/3	n. q.	
Australian, salted	84/-	84/-	84/-	84/-	81/2	102/7	115/6	105/7	116/8	
New Zealand, salted	87/-	87/-	87/-	87/-	83/10	104/-	117/6	109/10	119/11	
<b>CHEESE.</b>										
Milan (lire per quintal):										
Parmigiano-Reggiano, 1st quality of last year's production	1,050.00	1,050.00	1,050.00	1,050.00	1,050.00	1,092.00	1,140.00	1,016.00	1,103.00	
Green Gorgonzola, mature, choice	455.00	455.00	475.00	475.00	476.25	454.00	610.00	512.70	616.00	
Rome: Roman pecorino, choice (lire p. quintal)	1,075.00	1,062.50	1,075.00	1,075.00	1,093.75	1,347.00	1,169.00	1,251.00	1,121.00	
Alkmaar: Edam 40 + (40 % butterfat, with the country's cheesemark, factory cheese, small; florins p. 50 kg.)	24.00	23.50	23.50	24.50	24.12	23.69	34.37	24.41	32.63	
Gouda: Gouda 45 + (whole milk cheese, with the country's cheesemark, home made, florins p. 50 kg.)	26.50	27.00	26.00	27.50	26.87	24.62	38.25	26.92	37.93	
Kempten (c): (Pfennige per half kg.):										
Soft cheese, green (20 % butterfat)	18 1/2	18 1/2	18	18	18	21 1/2	21 1/2	21	24	
Emmenthal from the Allgäu (whole milk cheese) 1st quality	71	70 1/2	70 1/2	70 1/2	73	83	99 1/2	81 1/2	97 1/2	
London (d) (shillings per cwt.):										
English Cheddar	100/-	100/-	100/-	98/-	97/7	124/-	104/-	109/-	99/10	
Canadian	75/-	75/-	75/-	75/6	73/10	80/9	79/10	72/10	75/9	
New Zealand	55/6	55/6	55/6	55/6	52/7	59/5	59/-	63/1	63/2	
Liverpool (d): Engl. Cheshire, ungraded (sh. p. cwt.)	60.8	60/8	65/4	65/4	64/3	73/9	67/8	103/10	94/3	

n. q. = not quoted. — n. = nominal. — a) Thursday prices. — b) Prices of preceding Tuesday. — c) Wednesday prices. — d) Average prices for weeks ending on preceding Wednesday.

1) The monthly averages are based on weekly quotations, the annual averages on the monthly. — 2) From January 1933: quotations in Zurich; see note on page 425. — 3) The method of quotation was changed in January 1932; in June another change has occurred; see note on page 425. — 4) September 1932-January 1933: Russian.

### Butter prices in the protected Dutch markets.

In the following tables are reproduced price quotations published by the *Eerste Coöperatieve Boterverkoop Vereeniging, Zutphen* (First Cooperative Association for the Sale of Butter, Zutphen) as from January 1933, *i. e.* for the period during which the Maastricht butter-auction did not publish prices. Quotations are expressed in florins per kg. :

Average January. . . . .	1.64 $\frac{1}{4}$	3 March . . . . .	1.57
» February . . . . .	1.57 $\frac{1}{2}$	10 » . . . . .	1.53
» March . . . . .	1.53 $\frac{1}{2}$	17 » . . . . .	1.54
» April . . . . .	1.55 $\frac{3}{4}$	24 » . . . . .	1.50
6 January . . . . .	1.59	31 » . . . . .	1.53
13 » . . . . .	1.58	7 April . . . . .	1.54
20 » . . . . .	1.74	14 » . . . . .	1.56
27 » . . . . .	1.66	21 » . . . . .	1.56
3 February. . . . .	1.69	28 » . . . . .	1.57
10 » . . . . .	1.60	5 May . . . . .	1.55
17 » . . . . .	1.48	12 » . . . . .	1.55
24 » . . . . .	1.53	19 » . . . . .	1.55

(For continuation see Monthly Review of Prices. See also note on page 721 of Crop Report for October 1932).

### Price of butter on the Kempton market.

Prior to 1932 dairy butter at Kempton was quoted as a single quality, but with a margin which contained a maximum and a minimum (in the Crop Report the average of these two limits was given) whilst for consignments of dairy butter of good quality a supplement was paid.

From January 1932 onward two qualities have been quoted, each with a single price. The price of the second quality may be considered as 3 pf. above the average according to the old system ; the price of the first quality (dairy butter of good quality) was usually 12 pf. above that of the second quality. The prices of the first quality have been here quoted, above which a further supplement was given for "extra" butter, manufactured from pasteurized milk or cream.

A further change has taken place as from June 1933, in pursuance of a decree of the Bavarian Government dated 24 May, according to which there must be two qualities of dairy butter : the first made from cream which has been pasteurized immediately after separation, the second made without pasteurization. The former first quality has now become the second quality. It is for this quality that prices will henceforward be published in the Crop Report.

## THE TREND OF PRICES OF AGRICULTURAL PRODUCTS

In the following pages the index-numbers of prices of agricultural products and other price-indices of interest to the farmer are given as published in the different countries. Owing to the substantial divergence which often exists in the value and significance of the data available, it has been considered opportune to reproduce all the data in their original form only, without attempting formally to unite them.

But in addition to the original data summary table are given below.

*Percentage variations in the index-numbers for May, 1933.*

COUNTRIES	compared with those for April, 1933		compared with those for May, 1932	
	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general	Index-numbers of prices of agricultural products	Index-numbers of wholesale products in general
Germany . . . . .	+ 2.9	+ 1.3	— 9.9	— 5.5
England and Wales . . . . .	— 2.9	+ 3.0	— 11.3	+ 1.5
Argentina . . . . .	+ 7.4	—	— 3.2	—
Canada . . . . .	+ 9.4	+ 2.3	+ 2.6	— 1.2
Estonia . . . . .	...	—	...	—
United States . . . . .	a) + 17.0	—	+ 10.7	—
	b) + 12.8	+ 3.8	+ 7.7	— 2.6
Finland . . . . .	+ 2.8	0.0	+ 1.4	0.0
Hungary . . . . .	— 2.9	— 1.2	— 26.7	— 18.6
Italy . . . . .	— 1.2	0.0	— 24.3	— 9.7
New Zealand . . . . .	— 3.1	—	— 10.1	—
Netherlands . . . . .	+ 2.1	...	— 2.0	...
Poland . . . . .	— 3.0	— 0.7	— 20.2	— 13.5
Yugoslavia . . . . .	c) — 4.5	— 2.1	c) — 19.3	— 0.8
	d) — 1.8	—	d) + 3.2	—

a) Bureau of Agricultural Economics — b) Bureau of Labor. — c) Vegetable products — d) Animal products.

# INDEX-NUMBERS OF PRICES OF AGRICULTURAL PRODUCTS AND OF COMMODITIES BOUGHT BY THE FARMER \*

COUNTRIES AND CLASSIFICATIONS	May 1933	April 1933	March 1933	Feb. 1933	Jan. 1933	Dec 1932	May 1932	May 1931	Year	
									1932 1)	1931
<b>GERMANY</b> (Statistisches Reichsamt) 1913 = 100.										
Foodstuffs of vegetable origin . . . . .	99.4	97.8	99.0	97.0	95.7	96.6	121.2	131.8	112.0	119.3
Livestock . . . . .	59.2	59.9	61.3	60.5	57.9	60.6	63.2	83.9	65.5	83.0
Livestock products . . . . .	93.2	85.3	84.6	88.0	87.5	96.9	90.0	102.5	93.9	108.4
Feeding stuffs . . . . .	84.2	83.4	83.8	81.8	81.9	83.2	96.1	120.0	91.6	101.9
Total agricultural products . . . . .	84.2	81.8	82.5	82.2	80.9	84.4	93.4	109.2	91.3	103.8
Fertilizers 2) . . . . .	71.2	71.9	72.7	73.4	72.6	70.2	70.7	77.2	—	76.5
Agricultural dead stock . . . . .	110.9	111.1	111.2	111.5	112.5	113.1	116.4	130.6	116.1	130.7
Finished manufactures (Konsumgüter) . . . . .	109.9	109.2	109.5	110.5	111.4	112.0	118.8	141.7	117.5	140.1
Wholesale products in general . . . . .	91.9	90.7	91.1	91.2	91.0	92.4	97.2	113.3	96.5	110.9
<b>ENGLAND AND WALES</b> (Ministry of Agriculture and Fisheries) Average of corresponding months 1911-13 = 100.										
Agricultural products . . . . .	102	105	102	106	107	103	115	122	109	120
Feeding stuffs . . . . .	85	86	90	91	92	90	97	87	95	83
Fertilizers . . . . .	91	90	90	90	90	89	91	100	90	96
Wholesale products in general 3) . . . . .	95.2	92.4	90.6	90.6	91.5	91.4	94.4	96.7	94.9	97.7
<b>ARGENTINA</b> (Banco de la Nación Argentina) 1926 = 100.										
Cereals and linseed . . . . .	54.2	51.7	51.7	52.6	53.8	52.2	59.9	54.3	59.5	55.8
Meat . . . . .	65.0	63.7	64.0	57.7	55.2	56.8	74.5	94.3	69.8	94.3
Hides and skins . . . . .	72.3	53.2	49.9	49.1	54.5	51.4	40.6	68.1	53.1	64.5
Wool . . . . .	49.6	41.9	40.8	40.8	42.1	36.8	41.1	57.6	44.2	61.2
Dairy products . . . . .	48.4	49.4	51.8	52.3	53.9	53.3	58.4	73.4	56.9	74.5
Forest products . . . . .	71.8	71.8	71.8	71.8	70.9	68.5	66.3	108.7	68.4	99.3
Total agricultural products . . . . .	56.7	52.8	52.6	52.4	53.5	51.9	58.6	63.2	59.1	63.8
<b>CANADA</b> (Internal Trade Branch of the Dominion Bureau of Statistics) 1926 = 100.										
Field products (grain, etc.) . . . . .	46.9	41.1	38.0	36.0	35.1	33.6	44.6	46.4	40.7	43.6
Animals and animal products . . . . .	58.4	56.4	56.0	54.7	57.9	57.8	58.7	76.6	60.9	77.6
Total Canadian farm products . . . . .	81.2	46.8	44.7	43.0	43.6	42.7	49.9	57.7	48.3	56.3
Fertilizers . . . . .	73.0	71.7	72.9	72.9	72.3	72.3	70.5	86.7	71.8	82.6
Consumer's goods (other than foodstuffs, etc) . . . . .	75.5	74.8	76.0	76.1	76.7	77.0	78.7	79.3	78.8	80.0
Wholesale products in general . . . . .	66.9	65.4	64.4	63.6	63.9	64.0	67.7	72.5	67.0	72.1
<b>ESTONIA</b> (Central Bureau of Statistics) 1913 = 100.										
Commodities imported 4) . . . . .	...	...	...	...	...	111	114	135	113	129
Commodities exported . . . . .	56	54	58	58	58	59	56	77	58	76
Agricultural products imported and exported 4) . . . . .	...	...	...	...	...	74	72	94	74	91

\* For an explanation of the method of calculation of the index numbers, reference should be made to the Institute's publication "Index-numbers of Prices of Agricultural Products and other Price-indices of interest to the Farmer" (Rome, 1930), as well as to pages 77 to 79 of the "Crop Report" of January 1932 and to page 517 of the "Crop Report" of July 1932.

1) Most data for 1932 are provisional. — 2) From July 1932 new series. — 3) Calculated by the "Statist", reduced to base-year 913 = 100. — 4) From January 1932 the price of rye is excluded from the calculations.



COUNTRIES AND CLASSIFICATIONS	May	April	March	Feb.	Jan.	Dec.	May	May	Year	
	1933	1933	1933	1933	1933	1932	1932	1931	1932	1931
									1)	1)
<b>UNITED STATES</b>										
(Bureau of Agricultural Economics)										
Average 1909-10 to 1913-14 = 100.										
Cereals . . . . .	62	47	36	34	34	33	49	74	44	63
Fruits and vegetables . . . . .	68	66	60	57	59	59	80	119	71	98
Meat animals . . . . .	65	57	56	53	51	52	59	99	63	93
Dairy products . . . . .	63	59	59	62	68	69	69	91	70	94
Poultry and eggs . . . . .	62	56	54	57	96	121	60	77	80	96
Cotton and cottonseed . . . . .	65	49	48	44	45	43	42	74	46	63
Total agricultural products . . . . .	62	53	50	49	51	52	56	86	57	80
Commodities purchased by farmers 2) . . . . .	100	...	103	104	105	106	112	131	111	129
Agricultural wages 2) . . . . .	—	...	—	—	74	—	3) 94	3) 127	90	116
<b>UNITED STATES</b>										
(Bureau of Labor)										
1926 = 100.										
Grains . . . . .	52.8	44.8	36.0	32.7	32.9	31.7	42.6	59.6	39.4	53.0
Livestock and poultry . . . . .	46.8	41.0	43.0	40.1	37.8	38.7	44.4	64.1	48.3	63.9
Other farm products . . . . .	51.8	46.7	45.3	44.2	48.7	51.3	49.6	71.5	51.4	69.2
Total agricultural products . . . . .	50.2	44.5	42.8	40.9	42.6	44.1	46.6	67.1	48.2	64.8
Agricultural implements . . . . .	83.0	83.1	83.1	83.1	84.5	84.5	84.9	94.7	84.9	94.0
Fertilizer materials . . . . .	66.8	62.9	61.9	61.5	62.3	63.1	69.4	80.5	66.9	76.8
Mixed fertilizers . . . . .	63.1	60.0	60.1	62.4	62.7	65.6	69.0	82.8	69.4	82.0
Cattle feed . . . . .	54.4	49.5	47.3	40.6	38.2	37.1	45.9	67.9	45.9	62.7
Non-agricultural commodities . . . . .	65.4	63.7	63.8	63.7	64.9	66.5	68.1	72.6	68.4	73.0
Wholesale products in general . . . . .	62.7	60.4	60.2	59.8	61.0	62.6	64.4	71.3	64.9	71.1
<b>FINLAND</b>										
(Central Bureau of Statistics)										
1926 = 100.										
Cereals . . . . .	91	90	90	91	89	89	89	79	90	77
Potatoes . . . . .	95	93	93	91	78	71	69	68	71	68
Fodder . . . . .	68	66	67	71	69	66	72	67	69	63
Meat . . . . .	69	68	66	66	63	57	63	67	61	64
Dairy products . . . . .	71	67	67	69	73	77	72	71	76	76
Total agricultural products . . . . .	73	71	72	74	73	72	72	71	74	72
Wholesale products in general . . . . .	88	88	89	89	90	90	88	84	90	84
<b>HUNGARY</b>										
(Central Bureau of Statistics)										
1913 = 100.										
Agricultural and livestock products . . . . .	66	68	71	72	71	68	90	85	—	—
Wholesale products in general . . . . .	79	80	82	83	82	81	97	93	—	—
<b>ITALY</b>										
(Consiglio Provinciale dell'Economia										
Corporativa di Milano)										
1913 = 100.										
National agricultural products . . . . .	272.28	275.55	289.77	305.65	314.67	322.97	359.91	357.20	339.63	343.11
Wholesale products in general . . . . .	282.24	282.18	287.23	292.64	296.49	298.95	312.54	347.16	309.91	341.57
<b>NEW ZEALAND</b>										
(Census and Statistics Office)										
Average 1909-13 = 100.										
Dairy produce . . . . .	77.3	76.4	77.6	83.3	82.7	83.9	94.9	91.1	93.8	98.9
Meat . . . . .	107.5	110.5	111.8	119.2	123.0	108.7	114.1	124.6	109.1	130.1
Wool . . . . .	56.7	64.7	63.0	64.3	61.1	52.7	56.5	76.7	61.3	67.9
Other pastoral produce . . . . .	55.1	55.6	57.6	58.9	59.8	61.7	59.0	78.9	62.2	76.7
All pastoral and dairy produce . . . . .	77.4	79.9	80.5	85.1	85.0	79.9	86.5	94.9	86.4	96.5
Field products . . . . .	113.9	114.9	115.0	107.0	116.4	96.8	111.2	115.8	101.7	115.5
Total agricultural products . . . . .	78.4	80.9	81.4	85.7	85.8	80.4	87.2	95.5	86.8	97.0

1) Most data for 1932 are provisional. — 2) 1910-14 = 100. — 3) April.

COUNTRIES AND CLASSIFICATIONS	May	April	March	Feb.	Jan.	Dec.	May	May	Year	
	1933	1933	1933	1933	1933	1932	1932	1931	1932	1931
<b>NORWAY 1)</b>										
(Kgl. Selskap for Norges Vel)										
Average 1909-14 = 100.										
Cereals . . . . .	116	119	119	119	119	116	125	107	120	125
Potatoes . . . . .	84	80	82	81	79	75	155	157	101	130
Pork . . . . .	79	80	86	90	99	98	86	73	91	96
Other meat . . . . .	119	115	113	107	106	106	116	166	109	218
Eggs . . . . .	68	65	76	103	93	111	69	83	93	108
Dairy products . . . . .	119	119	119	118	118	128	119	124	124	156
Concentrated feeding stuffs . . . . .	98	99	100	101	103	103	106	108	104	121
Malze . . . . .	85	85	87	90	89	87	89	85	90	108
Fertilizers . . . . .	92	92	92	92	91	89	88	96	89	105
<b>NETHERLANDS</b>										
(Bureau of Agriculture)										
Average 1924-25 to 1928-29 = 100.										
Vegetable products . . . . .	38	37	40	41	40	41	56	83	2) 58	2) 72
Animal products . . . . .	51	50	48	50	50	50	47	72	2) 57	2) 77
Total agricultural products . . . . .	48	47	46	47	48	48	49	74	2) 57	2) 76
Agricultural wages . . . . .	74	83	83	83	83	83	83	95	2) 93	2) 99
Wholesale products in general 3) . . . .	...	...	48.7	50.1	50.7	51.4	53.5	69.0	77.8	65.7
<b>POLAND 4)</b>										
(Central Bureau of Statistics)										
1917 = 100.										
Vegetable products . . . . .	47.9	50.4	49.8	49.6	46.2	38.8	62.3	68.3	49.8	53.9
Worked-up plant products . . . . .	60.6	63.5	61.7	61.8	54.1	51.1	71.6	77.2	61.3	65.9
Total products of plant origin . . . . .	54.2	56.9	55.8	55.6	48.0	44.8	67.2	73.1	55.6	60.0
Animals . . . . .	42.9	44.6	43.5	40.1	37.3	37.6	52.5	56.1	43.1	55.8
Dairy products . . . . .	42.6	40.5	45.8	47.2	52.8	55.4	57.9	65.1	55.4	68.0
Total products of animal origin . . . . .	42.8	43.0	44.8	43.4	43.8	44.9	55.2	60.1	48.2	60.8
Total agricultural products . . . . .	49.0	50.5	50.7	50.0	46.2	44.8	61.4	66.8	52.0	59.7
Fertilizers . . . . .	94.4	112.9	112.9	112.9	110.8	107.6	95.1	124.7	105.5	120.2
Industrial products . . . . .	63.9	63.1	63.3	64.1	64.7	65.8	69.4	81.3	69.6	79.4
Wholesale products in general . . . . .	57.2	57.6	57.9	57.9	56.4	56.2	66.1	74.8	61.6	70.5
<b>YUGOSLAVIA</b>										
(National Bank										
of the Kingdom of Yugoslavia)										
1926 = 100.										
Vegetable products . . . . .	59.3	62.1	61.7	65.5	65.4	61.6	73.5	80.5	67.5	96.7
Animal products . . . . .	55.2	56.2	58.0	60.1	57.2	57.3	53.5	73.2	56.6	97.7
Industrial products . . . . .	71.8	72.7	73.6	73.0	73.0	68.1	65.0	73.0	66.2	80.2
Wholesale products in general . . . . .	64.9	66.3	67.8	68.4	67.6	64.8	65.4	75.4	65.2	88.8

1) The agricultural years refer to the period April 1-March 31. — 2) Agricultural year July 1-June 30. — 3) Calculated by the Central Statistical Bureau of the Netherlands, reduced to the base 1925-1929 = 100. — 4) Average data for the year 1932 are provisional.

## RATES OF FREIGHT

(Rates for entire cargoes)

VOYAGES	16	9	2	26	AVERAGE				Commercial Season	
	June	June	June	May	May	June	June			
	1933	1933	1933	1933	1933	1932	1931		1931-32	1930-31
<b>SHIPMENTS OF WHEAT AND MAIZE.</b>										
Danube to Antwerp/Hamburg . . . (shill. per	13/3	13/3	13/6	13/9	*)13/7 <sup>1</sup> / <sub>2</sub>	n. q.	n. 13/6		14/6	13/11
Black Sea to Antwerp/Hamburg . . long ton)	10/-	10/3	n. 9/3	n. 9/3	n. 9/6	10/2 <sup>1</sup> / <sub>2</sub>	10/4		10/10	10/10
St. John to Liverpool 1) . . . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.		1/7	1/6
Port Churchill to United Kingdom . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.			
Montreal to United Kingdom . . . . .	(shill. per	1/4 1/2	1/4 1/2	1/4 1/2	1/6 1/2	*) 0.07	1/8	*) 0.08	1/10	1/10
Gulf to United Kingdom . . . . .	480 lbs)	2/-	2/-	2/-	2/-	n. 2/3	2/2	2/6	2/3	2/3
New York to Liverpool 1) . . . . .	1/6	1/6	1/6	1/6	1/6	1/6	1/6	1/8	1/6	1/6
Northern Range to U. K./Continent .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	1/9	*) 0.09	1/9	1/9
North Pacific to United Kingdom (sh. per long										
ton) . . . . .	17/-	17/-	18/-	18/6	18/6	n. 18/3	n. 22/3	n. 22/2	22/3	22/3
Vancouver to Yokohama 1) (gold \$ per sh. ton).	1.75	1.75	1.75	1.85	1.85	*) 2.20	2.80	2.30	2.72	2.72
La Plata Down River, Necochea,										
Bahia Blanca 2) to U. K./Cont.	13/6	14/-	14/3	14/3	*)14/3 <sup>1</sup> / <sub>2</sub>	13/3	16/3	16/-	16/4	16/4
La Plata Up River 3) to U. K./Con-										
tinent . . . . .	(shill per	15/6	15/9	16/-	16/1 <sup>1</sup> / <sub>2</sub>	14/6 <sup>1</sup> / <sub>2</sub>	17/11	17/6	18/-	18/-
Karachi to U. K./Continent 4) . . .	n. q.	n. q.	n. q.	n. q.	n. q.	n. q.	19/-	n. q.	19/3	19/3
Western Australia to U. K./Con-										
tinent . . . . .	21/3	21/3	21/3	21/3	21/6	n. 21/3	27/3	26/-	29/8	29/8
<b>SHIPMENTS OF RICE.</b>										
Salmon to Europe . . . . .	(shill per	22/-	22/-	n 21/3	21/6	21/6	21/8	25/7	23/5	24/3
Burma to U. K./Continent . . . . .	n q	n q	n q	n q	n. 21/8	*) n. 18/4	21/10	n. 23/3	23/9	23/9

n. q. = not quoted. — n. = nominal. — 1) Rates for parcels by liners. — 2) "Down River" includes the ports of Buenos Aires and La Plata. — 3) "Up River" includes the ports on the Paraná River as far as San Lorenzo. Cargoes from ports beyond San Lorenzo (Colastine Santa-Fé and Paraná) are subject to an extra rate of freight. — 4) The original data being quoted in "scale terms", 10% is added to arrive at rates per long ton. — 5) Freight in \$ per 100 lbs. (Actually 10 \$ c per 100 lbs. are equivalent to 2/5 per quarter). — 6) 19 and 12 May; n 13/6; 5 May: 13/9. — 7) Canadian \$ — 8) 5 May: 14/6

## EXCHANGE RATES

OF DIFFERENT CURRENCIES IN RESPECT TO THEIR PARITY WITH THE SWISS FRANC (1)

NATIONAL CURRENCIES	Exchange rates				Percentage bonus (+) or loss (—)			
	16 June 1933	9 June 1933	2 June 1933	26 May 1933	16 June 1933	9 June 1933	2 June 1933	26 May 1933
Germany: reichsmark . . . . .	123.100	121.000	123.800	121.100	— 0.3	— 2.0	— 2.2	— 1.9
Argentina: paper peso *) . . . . .	132.671	132.416	131.619	131.731	— 39.7	— 39.8	— 40.2	— 40.1
Belgium: belga . . . . .	72.350	72.175	72.050	70.100	+ 0.4	+ 0.4	0.0	+ 0.1
Canada: dollar *) . . . . .	3.843	3.871	3.893	3.922	— 25.9	— 25.3	— 24.9	— 24.3
Denmark: crown . . . . .	78.400	77.900	77.850	78.000	— 43.6	— 43.9	— 43.9	— 43.8
Egypt: pound 2) . . . . .	17.550	17.500	17.475	17.490	— 30.4	— 30.4	— 30.7	— 30.7
United Kingdom: pound sterling . .	4.330	4.277	4.380	4.470	— 16.5	— 17.5	— 15.5	— 13.8
United States: dollar . . . . .	20.377	20.380	20.370	20.380	+ 0.4	+ 0.4	+ 0.3	+ 0.4
France: franc . . . . .	90.000	90.000	89.615	89.692	— 0.7	— 0.7	— 1.1	— 1.1
Indo-China: piaster 3) . . . . .	132.309	132.309	131.744	131.857	— 30.1	— 30.1	— 30.4	— 30.3
Hungary: pengo 4) . . . . .	27.100	26.950	26.875	26.950	— 0.6	— 1.2	— 1.5	— 1.2
India: rupee 4) . . . . .	110.000	108.000	108.000	108.000	— 57.4	— 58.2	— 58.2	— 58.2
Italy: lira . . . . .	208.175	208.275	208.100	208.500	— 0.1	0.0	— 0.1	+ 0.1
Japan: yen . . . . .	58.050	58.000	58.050	58.050	— 0.2	— 0.2	— 0.2	— 0.2
Netherlands: florin . . . . .	3.080	3.080	3.080	3.080	— 0.6	— 0.6	— 0.6	— 0.6
Poland: zloty . . . . .	90.500	90.000	89.600	90.000	— 34.8	— 35.2	— 35.5	— 35.2
Rumania: leu . . . . .	15.415	15.410	15.410	15.410	+ 0.4	+ 0.4	+ 0.4	+ 0.4
Sweden: crown . . . . .								
Czechoslovakia: crown . . . . .								

1) The exchange rate represents the value of 100 units of the national currency (for the dollar and the pound sterling, 1 unit) expressed in Swiss francs, as far as possible on the Zurich Exchange. With regard to the currencies marked with an asterisk (\*) or a cross (†) a conversion has been made, the original exchange rates on New York and on London respectively being converted into Swiss francs by means of the U. S. dollar or sterling rates respectively in Zurich. — 2) As the relation between the Egyptian pound and the pound sterling remains unchanged the exchange rate of the latter only is given. — 3) As the relation between the Indo-Chinese piaster and the French franc changes only slightly the exchange rate of the latter only is given.

Prof. ALESSANDRO BRIZI, Segretario generale dell'Istituto, Direttore responsabile

# AGRICULTURAL SCIENCE AND PRACTICE



# MONTHLY BULLETIN

OF

## AGRICULTURAL SCIENCE AND PRACTICE

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### EDITORIAL

#### **A New Publication of the Bureau of Agricultural Information.**

In the September number of the *Monthly Bulletin of Agricultural Science and Practice* the attention of our readers was drawn to a work undertaken by the Agricultural Information Bureau of the International Institute of Agriculture. This, it will be recalled, is the publication of a complete directory to all the technical agricultural institutions throughout the world.

It was announced that the section dealing with stock farming would appear towards the end of 1932. This promise has been fulfilled and we now have pleasure in announcing the volume of 325 pages which has just been published under the title of *The International Directory of Animal Husbandry Institutions*.

This volume, the preparation of which has been undertaken by Mr. S. TAUSSIG and Dr. E. MOSKOWITS, Redactors for the zootechnical branch of the Bureau of Agricultural Information, contains a list for the different countries of the institutions concerned with scientific stock farming, together with particulars of the technical personnel, activities and other useful facts concerning each (budget, results, publications, etc.).

Thus the directory contains the names and addresses of 907 institutions and 1817 workers in a total of 109 countries.

It has fortunately been possible to give for each country the figures of the 1931 livestock census. A very detailed index completes the volume.

Apart from the obvious usefulness of the work in establishing effective collaboration between workers and the interchange of ideas and publications, it fills a much-felt want and makes possible for the first time a comparison of the various animal husbandry institutions now existing. A special article on this subject will be published in the next number of this *Bulletin*.

Prof. GEORGES RAY.

## ORIGINAL ARTICLES

### Cotton Growing in the British Colonies and Territories under British Mandate in Tropical Africa.

#### I. — GOLD COAST.

The cotton growing region of the Gold Coast is in the Northern Territories.

For many years efforts have been made to promote cotton growing on a large scale in this region, but no success has yet resulted on account of the very low yields.

As far back as 1910 the British Cotton Growing Association erected a small ginnery there, distributed seed free among the natives, carried on propaganda and bought seed cotton. But after persevering for six years the Association was forced to close down.

During this period and until 1920 small trials were carried out by the Department of Agriculture which gave results varying from 46 to 247 lbs of seed cotton per acre, the average being about 100 lbs.

In 1926 another attempt was made to develop the industry, and the more settled state of the country, the improved transport conditions and the very much higher price which could be offered for the produce raised hopes that the response would be greater. A power ginnery was erected and several tons of seed from Nigeria were imported.

An experimental Station was opened at Tamale where field-scale trials of Allen were laid down.

The trials have been carried on continuously since.

#### Climate and soil.

The wet season is from March to October inclusive; from November to February it is practically rainless. The soil in general is of semi-permeable laterite close to the surface. Below this again it is common to find impermeable shale, and in consequence during the height of the rainy season excess moisture is inevitable. On the cessation of rains the soil naturally dries out very rapidly. Ridging is the native practice for crops.

#### Varieties tested.

The varieties tested include the following:

(a) *American varieties*: Zululand Hybrid, Improved Bancroft, Watt's Long Staple, D. & PL No. 6, 4128A-21-32 (from D & PL), Delphos 911, Express 121, Webber, Nyasaland and two varieties from the Turkestan Plant Breeding Station;

(b) *Asiatic varieties*: Coconadas 171, Nandyal, Karungani C 7, and 6 strains from the Turkestan station,

(c) *Native varieties*: Sonko (from Kpeve district), Kpalgunda and Ganvelga.

Of all these varieties none has shown any promise except the two Asiatic varieties, Coconadas and Karungan. These two give an average yield of 30.5 gms of lint per plant.

The selection work was carried on with Tamale strains and on two strains of Ganvelga cotton. Table I shows the yields obtained.

**TABLE I**

Strain	No. of plants at time of flowering	Yield of seed cotton per acre (lbs.)	Shedding percentage
T 60 smooth	1 875	70	81
T 60 fuzzy	520	100	79.2
T 57 smooth	1 428	92	76.5
T 57 fuzzy	430	106	80.3
D 8	2 787	181	64.7

#### Fertiliser trials

Trials were carried out with lime, basic slag and Kamit. These fertilisers were tried singly and in combination, on 1/16th acre plots four times repeated. The rates of application were as follows — lime 6 cwt. per acre, basic slag 8 cwt., Kamit 2 cwt. The planting distance was 4 x 1 ft. The results are shown in Table II.

**TABLE II**

Treatment	Mean yield per acre in lbs. seed cotton
Control	30
Basic slag	41
Kamit	27
Lime	31
Basic slag and Kamit	48
Basic slag and lime	36
Kamit and lime	37
Basic slag, Kamit and lime	4

The yields obtained were very low, but are similar to those obtained with Allen cotton before selection was begun. The results proved that no fertiliser alone had any marked effect, though basic slag had a certain influence. It is considered, however, that the full effect of the artificial manures was not demonstrated on account of deficiency of organic material in the soil.

Further, as the cost of fertilisers delivered in Tamale is very high their use is quite uneconomic.

The beneficial effect of a previous green manure crop was clearly shown in the rotation experiments begun in 1929-30.



## Insects and diseases.

Table III shows the percentage incidence of disease and insect attack in shed bolls of the selected strains.

TABLE III.

Strain	Stainer <i>Dysdercus</i> spp.	Bollworm	Physiological	Other injuries	Percentage of half-developed bolls shed
D 28 . . . . .	13.4	21.2	20.4	24.0	9.6
T 66 smooth . . . .	13.0	22.8	20.7	28.7	10.6
T 66 fuzzy . . . . .	12.4	24.4	22.6	25.9	12.7
T 57 smooth . . . . .	15.2	22.4	23.8	25.1	13.4
T 57 fuzzy . . . . .	15.1	22.7	22.5	25.4	12.4

Similar selection work has been carried out at the Kpeve Station. The principal work has been in connexion with the selection and production of the most desirable type of cotton for the district. The performance of the imported Ishan and Sonko varieties has been such as to justify the creation of seed plots in the neighbouring districts.

## Conclusions.

It is considered improbable that cotton, even if successful, will be grown as a pure stand for many years to come. At present food crops are the more profitable, but cotton is normally grown as a minor intercrop, and if a comparatively high yield can be maintained the area might be much increased. Lack of population would unfortunately be a limiting factor at present to any very large production.

## 2 — GAMBIA

Increasing attention is being paid to cotton production, particularly in the North Bank Province. This extension of cotton growing is directly connected with the decline in the market value of groundnuts. The spending power of the population has been reduced in proportion to the drop in groundnut values with the result that less imported cotton goods are being purchased and the increased demand for local yarn has necessitated an increase in local production of raw cotton.

## Varieties

The native species of cotton generally grown is *Gossypium punctatum*, which shows greater resistance to disease and insect attack than the later introduced varieties. Considerable care is taken with its cultivation. Under normal soil conditions the plants are small, but on fallowed or manured ground they frequently reach a height of 5 to 6 feet.

In 1929 seed of Allen Long Staple was introduced from Nigeria. The first trials of this showed that it was less resistant to insect attack than the local variety, and the lint was not uniform, varying from 10 to 27 mm.

#### Selection.

At the Wuli Farm selection has been carried out aiming at producing a type of cotton superior to that grown at present. The problem is being attacked from two standpoints:—

(a) An attempt to improve the present native type by selecting for lint length.

(b) An attempt to select imported Allen for resistance to pests and diseases and for uniformity of lint length.

The native cotton at the present time is nearly all Bourbon, with faint traces of Upland and Peruvian. These traces are all that remain of the imported seed, and it appears that these extra varieties have a very poor survival value. It is therefore considered more likely that good will ensue from improvement of the local type than by acclimatisation of the Allen type.

Selections from Allen cotton and from various native types were made in 1929 and selfed seed was obtained from the selected plants. During 1931 these were planted and detailed observations made on flowering, boll dropping, bud dropping, etc., of each plant.

The Allen produces its flowers on long fruiting branches arising from the main stem and consequently has a long flowering and bolling period. The native cotton bears a large number of vegetative branches from which at a certain stage in growth many short fruiting branches make their appearance almost simultaneously. Thus, when planted at the proper time, the native plant can produce the bulk of its crop during the limited time between the rains and the dry season, whereas the Allen must spread its flowering and fruiting time over a longer period and suffers from diseases and pests at the beginning and from drought at the end of the period.

Some Cambodia seed has recently been introduced from India and has been grown for increase.

### 3 - NIGERIA

Efforts to find or create in Nigeria a cotton which would be resistant to the diseases and insects which are liable to cause serious losses in the damp climate, were not crowned with success until 1926, when a selection from a local variety produced a resistant cotton which is also of higher commercial value.

#### Area of cotton cultivation.

Cotton is grown in the Northern and Southern Provinces of Nigeria and is exported from Saria and Sokoto in the north, Oyo and Ilorin in the south. It is grown in other parts but on a smaller scale and only for local consumption.

In the Northern Provinces cotton is grown on the stiff, heavy soils while groundnuts, which are the main crop are grown on the light sandy soils. The

year's output depends largely on the amount and distribution of the rains. Variable quantities of cotton are sown also, depending on cotton prices and on the success of the preceding food crops. If the grain crops have been poor, naturally less cotton and more grain is sown. Thus locusts caused a considerable reduction in the cotton acreage in 1930-31 following the damage to food crops in 1929-30. The good grain season in 1930-31, on the other hand, caused an increase in cotton planting in 1931-32.

In the Southern Provinces of Ilorin and Oyo cotton has been an important crop for a considerable time and even before exportation to Europe was begun.

### Experimental and selection work.

In 1927 it was decided to commence a co-operative farming scheme to assist native farmers and increase interest in cotton growing. The farm is situated at Daudawa in the Northern Provinces. Other farms were also formed (there were 22 in 1931) on the model of the central farm of Daudawa. All are under the direction of the Empire Cotton Growing Corporation. Each farm has an area of 10 acres and is expected to multiply selected strains of cotton seed for the Agricultural Department.

### Varieties.

#### (a) Northern Provinces.

The original native cotton is quite unsuitable for exportation and a beginning was made at replacing it by an American variety from Uganda in 1916. Only American cottons are now grown.

The common variety known as Commercial Allen, of which much seed is distributed each year, is very susceptible to jassid attack.

New strains have been selected at the farm of Samara which have proved more resistant to jassids than strain D. They also produce more and finer lint. It is to be expected that they will completely supplant strain D.

#### (b) Central Provinces

At present there are no improved cottons in the Central Provinces, i. e., the Ilorin, Kabba, Benue and Niger Provinces.

"Meko", the native cotton of Ilorin, is a low yielder and gives a poor quality lint; "Munshi", the cotton of Benue Province, has a better yield and its fibre is valued at "25"; the native cotton of Kabba has a high yield and its fibre is valued at "80", but unfortunately it is very late maturing.

The Kabba cotton is now being selected in the hope of obtaining an earlier strain. Trial plots have been formed for the selection work.

#### (c) Southern Provinces.

The native cotton was scarcely good enough for the export trade and had to be improved.

At the present time the Native cotton and an improved variety, Ishan, are grown. The latter is undoubtedly successful and continues giving an increasingly higher yield. Unfortunately, however, the lint is coarse, and selec-

tion work to obtain a finer lint has been undertaken. This has been done with the help of the Empire Cotton Growing Corporation. Two main lines of work are being followed. In the first place Dr. HARIAND is crossing Ishan A with a Sea Island cotton. The first cross-breeding experiments took place in the 1931-32 season, so some years must pass yet before the new strains will be ready for large scale trial.

The second experiments concern other Ishan hybrids previously obtained, which were sent to London to be tested by the Spinning Tests Committee of the Cotton Growing Corporation and were tried at the Sherley Institute at Didsbury. The results showed that certain of them had commercially valuable lint. In 1931-32 and the following season field tests have been and will be carried out to determine whether they are also successful for the grower.

Along with these trials Ishan cotton is being intersown with early and late ripening maize. The association Ishan-early maize has no effect on flowering, boll formation and outturn. Late maize on the other hand reduces boll formation and yield by about 25 to 30 %.

Seed of Sea Island cotton and Big Boll Okra has also been received from the West Indies for trial.

#### Pests and diseases

In the 1931-32 season cotton, specially in the trial plots, was badly attacked by insects and diseases.

Attacks by *Helopeltis hergrothi* were particularly frequent.

The new strains as well as the normally resistant strain A of Ishan cotton were badly infested with jassids (*Earias fascialis*). Stainers were numerous on the native cottons.

Trials of seed disinfection against bacterial diseases were carried on for the third time at Ilorin, the previous two experiments not having given significant results (probably owing to the unfavourable conditions).

Cotton seed steeped for 10 minutes in a 1 % solution of Germisan, then dried in a current of air at 50° C was sown in plots isolated by thick screens of maize and sorghum. The results were satisfactory, since in the treated plots the proportion of plants infected with *Bacterium malvacearum* was 7.4 % as compared with 76.3 % in the control plots.

Further the data seem to show that the treatment of the seed with Germisan has increased the yield by 100 lbs of seed cotton per acre.

#### 4. - NYASALAND.

##### Cotton growing areas.

Cotton is grown in most districts of Nyasaland. A classification of the cotton areas is quoted below (Table IV).

The classification of the cotton areas of Nyasaland given here is, it will be understood, somewhat generalised, since the demarcation of the administrative districts does not necessarily correspond to the natural demarcation of the country by physiographical and ecological features. Certain districts are however

TABLE IV. — *Cotton areas of Nyasaland.*

District	Approximate elevations above sea level (ft.)	Types of crops	Months in which sown	Months in which harvested
1. Lower Shire . . . . .	200 — 500	Winter Semi- summer	Mar.-May Jan.-Feb.	Sep.-Dec. July-Oct.
2. Chikwawa . . . . .				
3. Blantyre W. . . . .				
4. Upper Shire W . . . .	1000 — 2500	Winter Semi- summer Summer	Mar-May Jan.-Feb. Nov.-Dec.	Sep.-Dec. July-Oct. May-Aug.
5. S. Nyasa W. . . . .				
6. Ncheu . . . . .				
7. Dedza E. . . . .				
8. Dowa E. . . . .				
9. Kotakota E . . . . .				
10. Karonga E. . . . .	2000 — 3500	Semi- summer	Jan.-Feb. Nov.-Dec.	July-Oct. May-Aug.
11. Cholo . . . . .				
12. Mlanje . . . . .				
13. Blantyre E . . . . .				
14. Chiradzulu . . . . .				
15. Zomba . . . . .				
16. Upper Shire E . . . .				
17. S. Nyasa E. . . . .	2500 — 4000	Summer	Nov. Dec.	May-Aug.
18. Dedza W. . . . .				
19. Lilongwe . . . . .				
20. Ft. Manning . . . . .				
21. Dowa W. . . . .				
22. Kotakota W . . . . .				
23. Kasungu . . . . .				

divided into eastern and western sections by the fact that the Rift valley runs north and south.

Districts 1 and 2 form the Lower River section of the Rift valley and are the main cotton producing areas at present. The climate in these districts is for most of the year favourable to cotton.

Districts and part-districts 3-10 comprise the remainder of the Rift valley areas in Nyasaland in which cotton has been or can be grown. Conditions as a whole are slightly less favourable to cotton than in the Lower River.

The third group of districts forms the eastern plateau areas, and the fourth the western plateau comprising Central Angoniland. Conditions for cotton growing in these areas are distinctly less favourable since if the rains are not suitable the crop, except in the specialised and restricted area of the Palombe plain in the Zomba district, will be unable to fruit before cold or drought limits development.

#### Work of the Experimental Stations

Three Experimental Stations for studying the cotton problems of Nyasaland have been founded by the Government with the help of the Empire Cotton Growing Corporation. They are situated at Makwapala, Port Herald and Domira Bay

The work has two main aims in view : to determine which are the areas most suited to cotton and to find varieties resistant to diseases and insect pests.

Work at Makwapala has confirmed that the two plateau areas of the country are suited only to summer crop cotton. The Central Angoniland plateau has proved to be the most extreme area in which cotton has been tried and only very early cottons are likely to succeed. It is the first area in Nyasaland where temperature has been found to be a limiting factor for cotton.

The best season for sowing at Makwapala is as soon as the rains allow. Rotation experiments have been tried at the Station with cotton, tobacco, maize, certain Leguminous crops, *Crotalaria juncea*, groundnuts, etc. Other investigations have been in connexion with soil preservation (terracing, etc.). Similar studies and spacing and varietal trials have been carried out at Port Herald and Domira Bay.

#### V a r i e t i e s.

The results obtained on the stations have indicated that in the mixed bulk U. 4 selected by Mr. PARNELL at Barberton (Union of South Africa), a cotton has been found which gives good results over the whole of Nyasaland. This flexibility is unapproached by any cotton previously tried and it was decided in 1930 to use the isolated Lisungwe area in Blantyre W. district for large scale bulking of this strain. In spite of an unfavourable season and the slump in cotton prices sufficient seed was obtained to supply some two-thirds of the entire 1932 acreage.

The Lisungwe area was again supplied with U. 4 seed from the stations. In 1933 Lisungwe will for the third time be supplied and in 1934-35 the whole country should be supplied with a reasonably pure stock.

The complete scheme is as follows :—

1930-31. — Mixed bulk of U 4 from Stations and elsewhere to Lisungwe.

1931-32. — Mixed bulk of U.4 from Stations to Lisungwe. Seed from Lisungwe 1930-31 crop to Port Herald-Chiromo section of Lower River area.

1932-33. — Mixed bulk of U.4 from Stations to Lisungwe. Seed from Lisungwe 1931-32 crop to Port Herald. Port Herald crop from 1931-32 crop to general issue.

1933-34 onwards as for 1932-33 until such time as it is decided to replace the mixed bulk U.4.

#### C o n c l u s i o n s.

In spite of the present world slump it is difficult to be otherwise than optimistic about cotton growing in Nyasaland.

#### 5. — UGANDA.

The origin of cotton in Uganda is shrouded in the mists of antiquity and it is difficult to find any reference to wild or indigenous cotton plants except in one or two isolated cases. In 1862 Speke and Grant reported that *G. barba-*

*dense* was to be found in Uganda. In 1872 Samuel Baker coming from Egypt by the Nile brought with him some seed of "Gallini" cotton which he established near Masindi. In 1880 Emin Pasha writing of the Equatorial Province stated that a kind of cotton occurred, the ripe grains of which were green, but which had long and fine fibres. In 1886 cotton was being woven in Uganda. But it was only in 1893 that a wild cotton growing throughout the country was reported.

The wild cottons include the following types :—

(a) *Segamwenge* cotton, which grows in Buganda and is of the *G. brasiliense* type. It is probable that it was introduced by Arabs or other traders from Egypt or the Sudan, and may be similar to the "Jumel" cotton in Egypt and the "Nyam-Nyam" cotton in the Sudan

(b) *Bufumese* cotton, which grows in Busoga and from all accounts is similar to *Segamwenge*.

(c) In 1910 Mr. LAMB found specimens of *G. obtusifolium* var. *Africana* and *G. brasiliense* on the northern shores of Lake Kwana.

(d) *Ewaru* cotton, which grows in the Western Province and seems to have been introduced by the Sudanese.

In 1903 the Government became interested in cotton as an economic crop. It imported from Egypt seed of each of the following varieties: Abassi, Afifi and Ashmouni. At the same time the Uganda Company imported seed of the following types: American Upland, Afifi, Peruvian, Sea Island, Black Peruvian and Yannovitch.

Of these only the American Upland and Abassi showed promise.

In 1905 more Abassi was imported. This proved a complete failure and it was decided that American Upland varieties alone were likely to succeed. But the Uganda Company distributed seed the result of which must have been an enormous mixture of varieties.

By 1908 the crop had spread considerably in Buganda and Busoga. The distribution of the crop in the 1910-11 season is interesting (Table V).

TABLE V. — *Distribution of cotton crops in Uganda in 1910-11.*

Region	Acres
Buganda . . . . .	21 818
Busoga . . . . .	8 828
Kumi . . . . .	4 500
Mbale . . . . .	1 071
Lango . . . . .	574
Bunyoro . . . . .	1 988
Ankole and Toro . . . . .	2 914

In the 1911-12 season the first cotton experiment station was opened at Kadunguru, where work proceeded until 1916 when Simsa near Soroti was chosen as a better site.

Importation of new varieties was continued, particularly of Sunflower seed from East Africa and a Nyasaland Upland cotton.

In 1918 a cotton tax was imposed for the development of the industry including the maintenance of two cotton selection stations at Bukalasa (Buganda Province) and Serere (Eastern Province). Cotton selection work began at Serere as soon as the buildings were erected and the land cleared in 1920, that at Bukalasa began in 1922. At the present time the Bukalasa station serves the Buganda and Bunyoro Provinces (i. e., the zone where elephant grass, *Pennisetum purpureum*, grows), and the Serere station serves the Eastern and Northern Provinces.

The 1919-20 season saw a rise in prices which resulted in a considerable extension in cotton growing. Next season there was a fall in prices. After this setback, however, the acreage increased rapidly, reaching 700,000 acres in 1928-29.

The selection work continued in the two stations, using almost exclusively the Nyasaland Upland.

#### Present state of cotton growing.

The Bukalasa and Serere Stations are the two centres for cotton improvement.

##### (a) *Bukalasa Station.*

Three two-acres plots have been allocated for breeding and three plots of the same area for the variety trials. Each is to be under cotton one year in three while for the other two years they will be under permanent cover crops so as to avoid soil erosion.

The weather conditions in the 1930-31 season (the latest for which data are available) were dry, especially during the latter part of the year. Dry spells in July caused difficulties in planting and in November, December and January caused heavy boll shedding.

The experiments have been concerned mainly with date of sowing and spacing, study of the subsoil, use of green manures, use of lime, intercropping, angular leaf spot and variety trials.

Regarding dates of sowing and spacing 12 experiments were undertaken, in which three dates (mid-June, mid-July and mid-August) and four spacings (1.2 m × 0.6 m, 0.9 m × 0.6 m, 1.2 m × 0.3 m, 0.9 m × 0.3 m) were tested. The results obtained indicate that the best time for sowing in the Bukalasa region is mid-June and that the best spacing is 0.9 m × 0.3 m.

The subsoil in the Bukalasa district is very stiff and when dry is too hard for adequate penetration by the root system of the cotton plant, so the roots turn and occupy only the surface layers. It was therefore decided to try a subsoiling experiment, which resulted in longer main roots and only 33 % of bent roots as compared with 57 % in the control plot. The subsoiled plot gave a higher yield.

In Buganda Province the native growers customarily interplant cotton with beans and groundnuts. In order to test whether this practice has any harmful effect on the outturn of cotton, plots were sown with cotton and then a month



TABLE VI

Strain	Flowers produced	Bolls harvested	Percentage bolls shed	Seeds per boll	Motes per boll	Lint weight per boll (gms.)	Lint length (mm.)	Lint index	Ginning outturn	Remarks
B 10	83	26	69	32.9	1.9	1.73	32.5	5.3	30.5	Most promising of the B series
B 31	85	30	65	31.4	2.8	1.61	31.5	5.1	31.6	Resistant to angular leaf spot
B 37	103	43	58	32.8	1.9	1.79	32.2	5.4	30.4	Erect bushy type, good yielder
B 42	85	30	65	33.3	2.4	1.81	32.2	5.4	33	Erect quick maturing type
B 15	48	24	50	33.5	2.5	1.80	29.7	5.4	32.4	Low shedder, Erect and quick maturing type
B 54	81	34	55	31.0	1.9	1.43	31.7	5.4	28.6	Erect habit
S G 88,1	68	26	62	33.4	2.1	1.86	32.8	5.6	31.9	Acala variety
S G 96,7	80	26	67	32.5	2.5	2.02	31.6	6.2	31.8	Re-selection from S G 27.
U 4.1	82	35	58	28.8	2.7	1.58	29.8	5.5	33.7	One of the best of the U <sub>4</sub> selections
U 4.9	62	28	55	29.4	2.6	1.75	27.6	6.1	35.3	Good habit but short stapled

later with beans and groundnuts. In every case the yield of these plots was lower than that of the controls. The effect on yield of growing elephant grass as a green manure was also tested, but the results were not conclusive. The use of *Crotalaria juncea*, which grew during the April rains, and liming (1 ton to the acre in June) caused a marked increase in production.

Efforts were made also to determine the influence on cotton of the preceding crop, and it was found that, all things being equal, cotton following sweet potatoes gave a markedly superior yield. This would appear to be due to the supplementary tillage in the harvesting of the potatoes. The experiments were concerned also with maize, groundnuts and beans.

The selection work on varieties was continued. Table VI shows some of the characters of the most promising strains. The figures given are the means of the row in each case.

Trials of the following new varieties were also carried out: local cotton (consisting of a mixture of Allen, Sunflower, Black Rattler, Nyasaland and several other types); N. 3/5 (from a selection made at Bukalasa in 1923-24 in a crop of Nyasaland Upland); S. G. 27 (from Serere); S. G. 29 (Serere strain); S. G. 23.8; S. G. 27.15.13.; U.4 (from Serere).

A shedding experiment was carried out on similar lines to those followed at Serere in the previous season. The shed buds and bolls were collected on strips of mosquito wire gauze. It was found that there was again high correlation between rainfall and bud shedding. Boll shedding was mainly due to drought conditions.

TABLE VII. -- Showing total shed per plant and total produced.

Total buds shed	Total flowers produced	Total bolls shed	Total bolls harvested
125	75	42	33

### Insect pests.

Owing to the dry conditions very little damage was done to the crop by insects, except for attacks on the young plants by *Syagrus*.

### Diseases.

Angular leaf spot appeared in August and spread rapidly until about 80 % of the crop was affected. Very little damage was done.

#### (b) Serere Station.

The season was successful, especially when compared with the previous year. Weather conditions were generally favourable and despite high rates of shedding a good crop was harvested.

Selection was continued as at Bukalasa. It is noteworthy that the U.4 families did much better at Serere than at Bukalasa. The drier conditions of

the Eastern Province would appear to be more suitable for U.4 than the comparatively moist Lake basin area.

Outside variety trials were also conducted at the following centres :— Labori, Orungu, Ngora (Teso District) ; Kamuge (Bugwere District) ; Vukuŵa (Busoga District) ; Ngetta, Aduku, Kabera-maido (Lango District). The following varieties were grown at each centre on plots of 1/40th acre :— S. G. 27, S. G. 29, S. G. 23 8, U.4 and N 17 (local variety).

## 6. — RHODESIA.

### A. *Southern Rhodesia.*

In spite of bad climatic and marketing conditions cotton growing has made remarkable progress.

Cotton growing is centred mainly in the Hartley District and in certain parts of Mazoe, Lomagundi and Matabeleland. The successful crop of 1923 was followed by two bad seasons, when the Government backed by the Empire Cotton Growing Corporation took active measures to encourage the natives not to abandon cotton. The Experimental Station at Gatooma was then founded. This station acts both as a general cotton research station and as a centre for distribution of improved seed

### Selection

Selection was begun in 1925 and aimed at obtaining varieties resistant to jassid attack and satisfactory from other points of view. The Cambodia varieties then grown were resistant to jassids, but the American varieties were nearly all highly susceptible. During the 1927-28 season seed of Parnell U.4 cotton was obtained from the Barbeton Station (Union of South Africa). From 1929-30 U.4 could be grown on a commercial scale. At the present time the growing of U.4 and derived strains such as U.A.64, 64/7, 78/3, 26/4 is continued. The most productive are the 64/7 and 26/4 strains.

All the seed used for the new season's trials has been treated with acid and only seed which is denser than water has been used.

### Spacing.

It was suggested to growers that a closer spacing, such as six inches in the row, might be advantageous. This past season the great majority of the growers adopted this closer spacing and the results generally seem to have been satisfactory. It seemed that in the weather experienced the more widely spaced plants were not making sufficient use of the area they occupied. The experiments were carried out with U.4/64 and U.4 Mixed Bulk, which were compared at the four spacings of 6, 12, 18 and 24 inches in the row. The results are shown in the table below.

TABLE VIII. — *Comparative trial of effect of spacing on yield of various strains.*

Strain	Yield per acre of seed cotton
U. 4/64 at 6 in . . . . .	267 lbs
U. 4/M B. at 6 in . . . . .	222 "
U. 4/64 at 12 in. . . . .	209 "
U. 4/M. B. at 12 in . . . . .	184 "
U. 4/64 at 18 in. . . . .	185 "
U. 4/M. B. at 18 in . . . . .	146 "
U. 4/64 at 24 in . . . . .	164 "
U. 4/M B at 24 in . . . . .	135 "

The observations and results of the year as regards fertilising are in complete agreement with those of last season. There was little evidence of improvements in yield or quality as a result of application of fertilisers at the time of planting. Possibly more satisfactory response to fertilising would be obtained in a season of heavier rainfall. On the Station three sets of plots were laid down with a wide range of fertiliser applications, varying combinations and amounts. No appreciable differences were noted between the plots. The land was carefully ploughed and replanted with cotton to observe the effects the second year after application.

Trials were also laid down to test the effects of application of 150 lbs per acre and 400 lbs per acre respectively of superphosphates, and of 150 lbs per acre of muriate of potash. The potash did not give significantly heavier yields, but the small increases due to the superphosphate applications were both significant. (See Table IX).

TABLE IX. — *Fertiliser trials.*

Treatment	Yield per acre of seed cotton
150 lbs superphosphate per acre . . . . .	259 lbs
400 lbs superphosphate per acre . . . . .	274 "
No superphosphate . . . . .	237 "
150 lbs muriate of potash per acre . . . . .	230 "
No potash . . . . .	236 "

There were 12 replications of each treatment.

#### Insect pests and diseases.

Cotton in Southern Rhodesia appears able to resist many of the diseases to which it succumbs in other countries. This is partly due to the moderate temperatures and rainfall and partly to the somewhat scattered cultivation, with long distances between one crop and another, which militate against the

appearance in epidemic form of any particular disease. Certain diseases, however, are capable of establishing themselves and of causing serious injury to a crop. Thus, angular leaf spot and boll rot caused by *Bacterium malvacearum*, which is carried by the seed, can be seen in almost any cotton field, whilst certain leaf spots, particularly that caused by *Phyllosticta gossypina*, are also widely distributed as a result, presumably, of the almost universal presence of spores of the fungus. At the present time, however, there are few diseases which seriously hamper the cultivation of cotton in the Colony.

In general attacks by insect pests are a result of a bad weather conditions.

The most important pests are the American, Sudan and Spiny bollworms.

Control was attempted by dusting with calcium arsenate, 5-7 lbs per acre.

There were mild attacks by *Dysdercus fasciatus* and a jassid attack which was negligible. Aphis was bad from the end of January till the first week in March, then they gradually disappeared owing to some undetermined cause.

### B Northern Rhodesia.

Cotton crops in Northern Rhodesia were as successful as in Southern Rhodesia in the 1923-24 season. The success here also was followed by a period of depression which induced the Government to take active steps to maintain cotton growing. It was helped by the Empire Cotton Growing Corporation and two experimental stations were opened, one at Mazabuka and the other at Fort Jameson.

#### (a) Mazabuka Station

#### Selection.

U.4 selections were used entirely. The work was difficult owing to the effect of different soil conditions on the plants. Two distinct soil types were encountered in the Mazabuka fields, where the experiments were carried out: one type was light coloured and sandy in texture, while the other was darker and of a heavier nature.

Resistance to staining as well as yield was tested.

#### Time of planting.

This experiment was carried out with U.4 Bulk. The preliminary results seem to indicate that the earlier dates give better yields.

Seed of U.4 Bulk and U.4/6 was distributed to farmers. The average yield was 256 lbs of seed cotton per acre, the highest yield being 410 lbs and the lowest 66 lbs per acre.

#### Insect pests.

The most common pests are .— *Chloridea obsoleta*, *Earias insulana*, *Dysdercus supersticiosus*, *D. fasciatus*, *D. intermedius*, and *Callidea dregeri*.

(b) *Fort. Jameson Station.*

Trials of selection have here also proved the superiority of the U.4 strains. Yields of the order of 700 lbs of seed cotton per acre have been obtained. It is thought that cotton might be grown in alternation with tobacco if trade conditions improve.

Insect attacks are negligible.

7. — SIERRA LEONE.

The spinning and weaving of cotton for making clothing has been a well-established domestic industry in Sierra Leone from remote times. During the last few years attempts have been made to produce a cotton suitable for the European market; these have consisted chiefly in the introduction of various improved exotic cottons. None of these attempts however has so far met with any appreciable measure of success.

The most notable of these efforts was the introduction in 1924 of a considerable quantity of Allen Long Staple seed from Northern Nigeria. This was sown in various parts of the country but the resulting crop was on the whole unsatisfactory, ripening as it did at the height of the rainy season and being heavily attacked by disease. In fact this and subsequent experience at the Njala Experimental Farm led to the opinion that it would be better to attempt by selection to improve some existing native type and possibly afterwards to cross this with an imported cotton. The type chosen for selection was «Quande», which is a slow maturing plant with strong, white, somewhat short lint. The plants are on an average poor yielders, but are marketly resistant to disease. Two other types are commonly grown by the natives, the «Fandewai» and the «Nduli», and interbreeding between the three may occur.

Three years of experiments have resulted in a decided increase in length of staple and in yield

These attempts and improvements have been hindered by the attacks of cotton stainers (*Dysdercus* spp). In fact if cotton growing is to be extended in Sierra Leone it will necessary to make an effort to deal with this pest.

8. — TANGANYIKA

Historical development.

In the beginning, under German rule, the method of introduction of cotton growing among the natives of the country was through official influence on behalf of the Colonial Economic Committee, whereby each hut owner in the coastal districts was to plant a half-hectare of cotton; but after the rebellion of 1905-6 the work had to be begun again and other methods of encouragement tried. These consisted in permitting the cotton to be grown among maize and the giving of bonuses for good cultivation and sorting. As a result of these measures by 1914 production of cotton other than native was considered to be more hopeful of extension. The cultivation by Europeans was chiefly in Mohoro, Kilwa, Lindi, Morogoro and Mwanza.

Cotton production for export suffered a complete stoppage until after the Armistice ; it was resumed in 1921 by the newly-founded Department of Agriculture. The plan followed for encouraging the African to grow cotton has been to provide means for ready and fair marketing for cash, to remind him appropriately early in each season of the advantages of the industry to him and of the necessity for sowing, cultivation and harvesting and for the destruction of old plants ; and to make easily available to him seed from the best and earliest cotton.

### Present state of crops.

Cotton improvement experiments are at present being carried on in the Morogoro (Morogoro District), Ibadakuli (Shinyanga District), Mpanganya (Rufiji District) and Mpapura (Mikindani District) Stations

#### (a) *Experiments at the Morogoro Station.*

The date of sowing experiments carried on here over several seasons have shown that in this region cotton should be planted as soon as possible after the beginning of the February rains. The plots were planted at weekly intervals from 1 February to 22 March. The plants were spaced at  $90 \times 50$  cm.

Selections were continued on U 4 cotton from the Barbeton Station in South Africa. Bulking of seed for demonstration farms and for growers was also continued.

#### (b) *Experiments at the Ibadakuli Station.*

Date of sowing and variety trials have been carried out

Five years' experiments have shown that in the Shinyanga District planting should be at the beginning of the heavy rains

The selection work was on U 4 cotton. Seed of U.4/4 and U 4/4/2 was introduced from Barbeton.

The U.4 strains develop with little rainfall and with rather low minimum temperatures. They are resistant to jassid attack, early maturing, resistant to drought and very prolific.

#### (c) *Experiments at the Mpanganya Station.*

These experiments are concerned with the crops of the whole Rufiji District. The Rufiji cottons are commercially the most important. The Mpanganya Station was started by the Germans in 1912 and reopened in 1922.

The experiments at present are concerned with time of sowing, spacing, topping, ratooning, variety trials, cotton selections and the relation of cotton to other crops.

The optimum dates of sowing depend on the amount and distribution of rainfall. There are two periods of rainfall: the short rains in November and the long rains from February to May. Experiments over several years have shown that the best time for sowing is from the last week of January to the end of February. Cotton sown earlier in January may yield more heavily but the quality is lower.

The spacing experiment was begun in 1922. The results are that a spacing of 3 feet by 18 inches gives the best yield, though when the crop is sown late on the lowlands a closer spacing of 2 ½ feet by 12 inches gives the best result. The experiments have shown definitely that there is no direct relation between the size of cotton plants and the yield of seed cotton; in fact, there is often an inverse relation, larger plants giving smaller yields.

Spacing affects the quality of the lint. The British Cotton Industry Research Association showed that longer and finer lint was produced from the more widely spaced plants.

Ratooning experiments have been carried out over several years on upland grown cotton, but have proved a failure as the plants die off soon after they are cut back at the end of November.

Experimentation has also shown that no increase in yield follows the practice of removing the growing tip. This bears out the conclusions reached by the Germans in pre-war days.

The varieties tested in the trials included Webber, Webber 49, Early King, R. M. 53, 68 and 90 from Baghdad, Improved Bancroft, Griffin, Uganda, Uganda 17, Watt's Long Staple, Rustenburg O and Foster Whitehall. The first place over two seasons was taken by Griffin.

The selections made by Mr. R. Cecil Wood were also maintained. Of these, that called M cotton has been replaced by J cotton. Selection of the Mp strains has also been continued.

The trials of all the varieties grown at the station showed a marked absence of uniformity. The variation is noticeable in the growth, the characteristics of the flower and fruit and in the time of ripening. Selection of individual types is aimed at reducing this variability. Some very noteworthy results have been obtained in this direction with certain Mp cottons.

As regards the relation of cotton to other crops data have been collected concerning the cash returns of rice sown as a pure crop and rice intersown with cotton. The latter gave definitely increased returns. There is also the value of the cover effect of the cotton crop, which by leaving the land clean at the end of the season appreciably reduces the labour costs for the preparation of the land in the following year. It is still difficult to persuade natives to plant cotton in the Rufiji District, but it has been found easier to do so where a system of interplanting with other crops is encouraged. Cotton is also planted between the lines of ripening maize; a month or so after sowing the cotton the maize is harvested and the stalks are cut and used as an effective mulch for the cotton. Intersowing with gram and with cassava has also been tried with success. The tall, coarse-growing native sorghums are unsuitable but cotton can be intersown with short finer types such as Dwarf Hegari and Feterita.

#### (d) *Experiments at the Mpapura Station.*

At the Mpapura Station the main experiments have related to time of sowing, with the result that for the Mikindani District the best time is found to be the month of January.



## Insect pests.

The new insect parasites of cotton are :— *Anoplocnemis curvipes*, *Diplognatha silicea*, *Dysdercus intermedius*, *D. superstitiosus*, *Hotea subfaciata*, *Macroraphis viridula* on the bolls; *Helopeltis bergrothi* on the flowers and young shoots; *Tragocephala variegata* on the stem.

The attacks of *Chloridea obsoleta*, *Earias* and the pink bollworm are still persistent.

J. L. LEGROS.

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#### Production of Figs in Greece.

A large number of varieties of figs (upwards of 750 are known in subtropical regions) are cultivated in Southern Europe and Africa, differing in their shape, size, colour and time of ripening. The best known is the common fig, *Ficus carica*.

In Greece the fig tree grows rapidly and attains a height of 6 or 8 metres; it is not exacting as regards soil but shows a preference for soils which are cool, deep and not too light. A number of varieties are grown, with green and coloured fruit, many of them yielding crops each year.

\* There are two crops in the year; the first are the "flower-figs", which are borne on the growth of the preceding year and ripen in June and July; the second crop, the autumn or summer figs, ripen in August, September or October. The latter are sweeter and are preferred to the flower-figs by the dried fig industry.

The common methods of propagation are by layers and cuttings. For layers 2-year-old wood is chosen and the lateral buds removed. Cuttings are taken of well-ripened wood, planted upright and covered with soil so that the terminal bud is buried at a depth of 2 or 3 centimetres.

Dried figs alone are commercially profitable. Drying is effected by placing the figs in rows on hurdles or trays exposed to the sun in a sheltered place ; at night they are taken into a well-ventilated room. It is necessary to turn the figs frequently and even to flatten them slightly to ensure quick desiccation. In general white figs are preferred by the trade on account of their appearance and the purple figs are used for home consumption. Fat figs are reserved for medicinal uses.

In Cyprus a good quality vinegar and a specially prepared brandy (Araki) are produced from figs by a process handed down from remote times.

The fig is of considerable importance in Greece to day. The total annual production is upwards of 20 000 metric tons of dried figs, the greater part of which is absorbed by the export trade. In 1931 about 10 000 tons were exported at a value of 46 500 000 drs., while in 1930 the export rose to 21 715 tons, valued at 113 071 200 drs.

The regions of Messene and Laconia in the southern part of the Peloponnesus are the most important fig growing districts for the export trade. Messene alone yields  $\frac{1}{4}$  of the total production of Greece. Kalamata is the main exporting centre in Messene, and Gythion, Plyta and Elia in Laconia. The fig is grown also in other parts such as Kimi (Iñuboea), Mytilene and Volo, but not on a large enough scale for export.

The greater part of the figs from Greece is exported to America, Austria, England, Germany and other Central European countries.

The price obtained by growers in recent years has been from 4 to 7 drachmas per kilo ; packing costs are 6 drs. for luxury figs, that is, 6 to 8 ounce packets wrapped in cellophane. The bulk of the figs of Messene and Laconia are packed in small boxes, on strings or, when marketed in bulk, in bags.

Since 1929 there has been an organisation in Greece called the " Office for the protection of Greek figs ", which is mainly concerned with the improvement of the figs. This institution, which is under the patronage of the Ministries of Agriculture and National Economy and is assisted by the Chambers of Commerce and of Agriculture and by the Agricultural Associations of Messene and Laconia, has already performed great services in the improvement of fig production. The Office has standardised the harvesting and drying practices and more particularly the packing of figs in the exporters' warehouses. Exporters are obliged to have clean warehouses with cement floors and ceilings and wire screens over the doors and windows and to disinfect them once a week. The workers must be clean and healthy, and the figs are sterilised twice : once by fumigation directly after drying, and a second time just before exportation with hot water, which serves also to wash them.

Fumigation is carried out in special stations formed by the Office and consists in treating the figs with a mixture of carbon dioxide and carbon disulphide for 8 hours. This method has been developed by the technical service of the Office.

in the course of the last year. As there has not yet been time to form similar fumigation stations in all the producing regions the Ministry has made sterilisation compulsory only for the figs for export to America, but from next year it will be compulsory for all exported figs.

The Office has taken measures also for the improvement of cultural practices, for control of insect pests and for the opening up of new markets

According to a number of analyses Greek figs contain 22-24 % of water, 2.5-3 % of protein, 2-2.5 % of fat, 2.5-3 % of ash and the remainder of carbohydrates, of which 52-60 % is sugar. It may be of interest to note that a kilo of figs represents 2 500 calories.

Figs also have special healthgiving properties in consequence of the diastases they contain and of their content in vitamins A and C, which is higher than in other fruits such as grapes, dates and apples

(Communication from the Ministry of Foreign Affairs of Greece)

## MISCELLANEOUS INFORMATION

### Crops of Temperate Regions.

WHEAT TRIALS IN 1932 AT THE EXPERIMENTAL FARM OF AUBORD, FRANCE — After a study of the weather conditions of the 1931-32 season M. L. PEYRIÈRE summarises the observations on the growth of wheat varieties in the following table.

(Observations on wheat at the Experimental Farm at Aubord in 1932)

	Variety	Date of heading	Susceptibility				Yield per hectare
			Rust	Smut	Lodging	Scald	Grain
							Quintals
1	Zara Strampelli	13 May	3	3	3	4	33
2	Riéli famille II	11 "	0	8	5	2	27
3	Iris . . . . .	10 "	3	8	0	1	30
4	Villa Glori	30 April	2	0	0	3	11
5	Mentana . . . . .	26 "	3	0	7	2	21
6	Cervaro . . . . .	15 May	8	0	6	3	22
7	Varone Strampelli . . . . .	14 "	3	4	3	2	23
8	Médéah . . . . .	15 "	0	0	9		
9	Blé dur 253 Miège	4 "	1	0	0	harvested together	
10	Blé dur 250 Miège	9 "	3	3	9		
11	Virgilio . . . . .	10 "	0	6	3	1	31
12	Luigia Strampelli . . . . .	13 "	7	8	6	2	28
13	Gironde . . . . .	12 "	5	0	0	7	27
14	G. 4 (Préparateur Etienne).	16 "	3	1	0	2	31
15	Saissette 54 barbue (Fondard)	14 "	3	1	4	1	14
16	Moyencourt . . . . .	15 "	8	2	0	5	23

Susceptibility: 0 = nil 5 = medium 10 = complete.

The writer arrives at the conclusion that the choice of wheat varieties is a delicate problem and no variety should be distributed for cultivation until after it has been tested on a field scale for several years

Amongst the many varieties capable of giving good results the following are mentioned :— *For very good soils* : — Hybride hâtif inversable, Zara Strampelli, Iris, Préparateur Etienne, Varone ; for trial : Villa Glori, Virgilio. *For good soils* : Iris, Gentile Rosso, Carlotta, Rieti II, Zara, Saissette 54 ; for trial : Mentana. *For medium soils* : Gentile Rosso, Rieti II, Tuzelle, Saissette.

(*Le Progrès Agricole et Viticole*, Montpellier, December 1932).

HEREDITY OF THE NATURE AND COLOUR OF THE BARB IN SMOOTH BARBED WHEAT. — In *Scientific Agriculture* (Ottawa 1932, No 3, pp 185-193) Mr. S. J. SIGFUSSON describes and discusses in detail the history of the smooth barbed wheat. Pure lines were established in order to study the inheritance of the white or black colour and the character smooth or rough of the barbs. The colour seems to be due to a single factor and is inherited in the proportion 3 to 1, black being dominant. Roughness of the barb seems due to one main factor, but there seems to be also at least one auxiliary factor, the influence of which is not sufficient to give rise to definite phenotypes. The factors determining the colour and nature of the barbs are inherited independently. Cytological examination neither confirmed nor contradicted the theory of a natural crossing at the beginning of the history of this wheat. The plants studied were found cytologically normal, having 14 chromosomes in the haploid state. The theory of a natural cross as well as a mutation of a gene is suggested to explain the origin of the smooth character of the barbs.

SEEDLING HAIRINESS AS A VARIETAL IDENTIFICATION CHARACTER IN WHEAT. — A method is described by which certain varieties of Canadian spring wheat may be identified by the hairiness of the seedling leaves. It was found that Marquis and Reward seedlings could be separated accurately within a day of emergence. This method may be of considerable practical interest as it will enable grain inspectors to verify seed samples more quickly than by any other known method. The standard germination tests made by the Dominion Seed Branch on wheat usually require ten days.

(J. B. HARRINGTON, *Scientific Agriculture*, Ottawa 1932, No 2).

MIXTURE OF COMMERCIAL WHEAT VARIETIES AND ITS EFFECT ON MILLING AND BAKING QUALITIES. — In *Scientific Agriculture*, 1932, No 5, Mr. J. B. HARRINGTON gives the results of a cooperative enquiry on the purity of commercial samples of Canadian hard red wheat. The enquiry was conducted under the auspices of the West Canada Agromonomical Society with the cooperation of Government agencies and the wheat pools of Saskatchewan and Manitoba.

The results show that the high quality wheat varieties of Saskatchewan and Manitoba are always over 90 % pure.

Milling and baking tests of mixed varieties showed that owing to the high nitrogen content of all the samples mixing was of little importance.

A. P.

THE VINE AND THE NATIVE GROWER IN ALGERIA — *Le Temps* of 9 December 1932 gives under the signature of M. P. BERTHAULT interesting facts about the extent of vine growing in Algeria. The vine has contributed more than any other crop to the establishment of the French planter in Algeria. In 1931 there were 11,816 vine growers in the country, 4,298 of them cultivating less than 5 hectares, 2,000 cultivating 5 to 10 ha and 635 cultivating over 100 ha. The cooperative wine cellars have a storage capacity of 2,100,000 hectolitres. Whether grown by small planters or by large estate owners the vine has always in Algeria been essentially the crop of the people.

G. R.

**THE CULTURE AND PRODUCTION OF TABLE GRAPES IN ALMERIA, SPAIN.** — The province of Almeria is the centre of the Spanish table grape industry, though table grapes are grown also in Murcia and Grenada, particularly in the Alhama valley. The Almeria table grapes have become world famous for their flavour, the size of the bunches and their good keeping quality. The grape skin is so strong that even 6 or 8 months after picking the grapes retain their beauty and are able to withstand long transport. The culture of these grapes was begun in the village of Ohanes in Almeria. Now the grapes cover an area of over 5000 ha of irrigated land not counting the non-irrigated.

The mean annual production is over 3 million barrels or upwards of 60 million kg. There are still large possibilities of the development of table grape growing for there are wide zones of land that might be utilised in this way. The production of grapes in the province is under the control of the "Camara Uvera" of Almeria. The exports in 1931 reached upwards of 1,700,000 barrels or over 34,000,000 kg. The principal markets are England, Germany, Denmark and South America. The vines begin to bear during the 4th year after planting at a rate of nearly 400 barrels or nearly 8000 kg of grapes per year. The grapes are graded in 4 classes:—"selecta" (extra), "escogida" (selected), "primera" (prime quality) and "normal" (ordinary).

(COLOMA, *Economia y Técnica Agrícola*, monthly publication of the Department of Agriculture of Madrid, 1932, No. 4).

**RATIONAL METHODS OF PLANTING OLIVES IN TUNISIA.** — The methods of planting olives in Tunisia are described by M. F. UNGER, Agricultural Adviser, in *La Revue Oléicole*, Nice, 1932, No. 316. He gives detailed descriptions of weeding (destruction of couch-grass and the jujube plant), the planting plan, terracing, propagation, time and method of planting, after-care (watering), refilling gaps, disbudding, cultural treatments and intercropping (grain crops, almonds, vines, marjoram, etc.).

**CHESTNUT CULTIVATION IN GALICIA, SPAIN.** — There are some 5 ½ million chestnut trees in Spain.

The main centres of chestnut growing are the provinces of Oviedo, Lugo, Leon, Navarre, Guipuzcoa and Orense. The total value of the year's production is estimated at 68 million pesetas. Out of the 3 million fruit trees growing in Galicia one million are chestnuts, giving an annual yield of 10 million pesetas.

The tree prefers light, cool soils which are deep and rich in organic and siliceous matter. The principal varieties grown in Galicia are:— the "Calva" (late ripening, very fine and keeping well), the "Amarela" (early and high yielding), the "Cuancho" (very good for drying) and the "rapada" (late, the fruit is darker and smaller than the other varieties). Propagation is by seed and grafting. The article also discusses the origin and characteristics of the chestnut, soil and climate, varieties, propagation and cultural treatments, picking and storage, value and uses, ink disease (*Blepharospora cambivora* Petri). There are 4 photographic illustrations.

(M. BATANERO MASEDA, *A. B. C.*, Madrid, 10 December 1932).

A. P.

## **Agricultural Engineering.**

**ELECTRIC ENGINE FOR SMALL FARMS.** — Publicity campaigns for promotion of rural use of electric power are heard of everywhere. In Germany for lighting the single-phase current is generally used and for power the 3-phase current. A large number of small

farmers who have electric lighting are not able to install the current for power on account of its high cost. Thus it is desirable to be able to adapt a small single-phase engine which shall be simple, cheap and easily connected to the lighting system. The single-phase induction engine satisfies these requirements, but in its simplest form it must be hand-started. On account of this difficulty the engine has not yet come into wide use. But as we are concerned here with small engines up to 1 h. p. only, hand-starting is not a serious drawback. Power up to 1 h. p. is sufficient for a number of uses on a small farm, while a more powerful engine would be too expensive to run. The small engine in question does not require a great deal of care, is readily portable and connected to the current in the required place and will turn in either direction according to the direction of rotation at starting, without the necessity of changing the direction of the current.

This small engine has been developed by DENCKER and DIENST at the Agricultural Machinery Institute of Sandsberg an der Warthe. The tests are described by the inventors in the *Technik in der Landwirtschaft*, No. 11, Berlin 1932.

NEW WHEELS FOR FARM CARTS. — It is a recognised fact that transport plays a very important part in agriculture. If the costs of farm transport are compared with those by sea and by rail they are found to be 50 : 1 : 3, which demonstrates the importance that a reduction of farm transport costs might have as a result of the construction of carts requiring less traction power.

In the last number of this *Bulletin* the new tendency to use wheels fitted with pneumatic tires was mentioned. These wheels now cost relatively little in consequence of the slump on the rubber market but these low prices cannot be counted on to remain as they are 5 times lower than in pre-war days. There is no doubt that pneumatic tires allow of greatly reduced traction force as compared with wooden wheels. They have however one drawback, namely their relatively small diameter, which sometimes on very soft ground makes it impossible to avoid unloading. The wider rims thus do not in this case compensate for the greater diameter of the ordinary wheel.

The wheels require not only somewhat wide rims but also a comparatively large diameter. The question of cart wheels has been studied in Germany under the direction of Prof. ZANDER, with the result that steel wheels have been constructed that can be applied to the old farm cart. These wheels which have wide rims, slightly incurved, a sufficient diameter, a hub completely closed and protected against dust and run on ball bearings, have been submitted to severe tests and have been found greatly superior to the ordinary wheel. They require less traction force and are stronger. (*Die Technik in der Landwirtschaft*, Berlin 1932, Nr. 11).

A NEW DANISH 'ROTARY DRUM'. — Up to the present rotary tillers have been little used for the staple crops though they are in common use in horticultural establishments and in the nursery garden. M. DINES PETERSON, Holback, who has given considerable study to this question, has succeeded in constructing a 'rotary drum' which can be attached to a Fordson tractor. Trials of the new machine seem to give encouraging results.

Comparative trials to test the effects of different tillage methods are being studied in England at the Department of Agricultural Engineering of the College of Agriculture, Wye, Kent. (*Jordbrugs Teknik*, Kobenhavn, 1932, Nr. 8).

## Animal Husbandry.

### GENERAL

REPORT OF THE AGRICULTURAL RESEARCH INSTITUTE OF PARIS FOR 1931. — This annual report (Imprimerie Nationale, Paris, 1932, 414 pp.) contains a series of highly interesting contributions on animal nutrition and physiology. The following are the main headings and authors: General survey, by Mme RANDOIN and M. SIMMONET. Vitamin research by Mme. RANDOIN, MM. SIMMONET, LÉCOQ, MICHAUX, JAVILLIER, FÉMERIQUE. Phosphorus in the tissues and the blood, by MM. JAVILLIER, ALLAIRE, FABRY-KANT. Magnesium in stock feeding, by MM. JAVILLIER, DJELATIDES, LAVOLLAY. On metabolism and the food ration, by MM. LEFFÈVRE, AUBUET. Stock feeding, by MM. ALQUIER, GAZEIFF, Mme KOGANE, M. SILVESTRE de SACY. Possible toxicity of groundnut cake. Comparative food value of different quality groundnut oils. Experiments on dried beet tops in sheep feeding.

ENVIRONMENT AND HEREDITY IN THE YIELD OF LIVESTOCK — I. KRUBGER states in an article published in the *Zuchtungskunde* (1932, 7-8) that research on the importance of environment and heredity in yield should be limited to two questions: What are the environmental conditions which appreciably influence the yield? What relationship is there between these conditions and the yield? He describes the method of research for solving these questions and himself is of the opinion that an accurate estimate of the given yields and environmental influences is essential.

### BREEDING METHODS

ARTIFICIAL FERTILISATION OF COWS IN BREEDING PRACTICE IN THE U. S. S. R. — In 1931 187,000 cows belonging to the "Skotovadobshedinenie" were artificially fertilised. The result was successful in 84 % of the cows. The method used allows of the fertilisation of 60 cows with the sperm of one bull at one service. In this way 1263 cows were fertilised with the sperm of the best imported bulls. Artificial fertilisation of cows would thus seem a method of great practical and economic importance.

(*Z. Skotovodstvo* 1932, 4-7) The new apparatus used for collecting the spermatozooids consists in a rubber tube open at one end and held open by metal rings at the orifice and in the middle. This method which was developed and tested by KOMAROV and NAGAEV allows of utilising a much greater number of spermatozooids and more active sperm.

### FEEDING

FORAGE SILOS IN ITALY. — The Experimental Station for Agricultural Bacteriology at Crema has made an enquiry to determine the number of silos and the value of the different systems used in Italy. Three main types may be distinguished: pit silos, used mainly for mangold pulp; covered silos (a coperchio) of the Cremasco type, specially adapted for storage of meadow grass; and American silos in the form of an open cylinder, used principally for fresh maize fodder. The enquiry revealed the existence of 680 pit silos, 2517 Cremasco silos and 83 of the American type. It has been proved that the Cremasco type silo is rational for fodder with a water content of 30-35 %, thus closely approximating to the content of hay. Losses of organic matter are reduced to a minimum. The American silo is suitable only for coarse forage such as green maize (60-70 % of moisture), and the loss in organic substances during fermentation is never less than 10 %. (*Nuovi annali dell'agricoltura*. Roma, 1931, Anno XI, n. 2-3, p. 302).



## HORSES

CONSUMPTION OF HORSE MEAT IN BUDAPEST. — In an article published in the *Magyar Gazdák Szemléje* (Budapest 1932, n. 12) Mr. A. ZALAGNI gives interesting facts about the increased consumption of horse meat in Budapest. The consumption of horse meat was able to spread only with difficulty in Hungary. The first slaughterhouse for horses was installed in 1905. From that time there was a rapid increase in the number of slaughterhouses for horses: at the end of 1905 there were 6 in Budapest, in 1913 28, and now there are 38. In 1905 839 horses were killed, in 1914, 7,377, in 1927, 8,955, in 1929, 12,327. The maximum number of horses slaughtered, 14,308, was in 1922. A comparison of the present prices of horse meat with those of beef shows that horse meat costs less than a third of the price of beef (250 *Filler* per kg. of beef as compared with 80 *Filler* per kg. of horse meat). The difference is less in the case of fat, for 1 kg of pork fat costs 172 *Filler* and 1 kg. of horse fat 150 *Filler*.

The quantity of horse meat consumed in 1929 was about 2,465,400 kg. Calculating a consumption of 0.20 kg per head per day this quantity would satisfy the meat requirements of 33,735 persons.

BREEDING AND EXPORTATION OF HORSES IN HUNGARY. — At the meeting held on 10 December 1932 by the Horse Breeding Committee of the National Hungarian Farmers' Association, Mr. B. HALASZ gave a detailed account of the present position of the horse breeding and export trade in Hungary.

The stock of horses according to the figures of the census taken in the spring of 1932, is 845,000 (in 1925 it was 876,000), of which 80 % are light horses and 20 % heavy draught horses. The best market conditions are in the heavy horse breeding districts and encourage breeding so that there is a great demand for stallions. The breeding of the English thoroughbreds is in a much less secure position. A fall of 75 % has occurred in the price of mares in the last 5 years.

As regards the export trade, from 1926 to 1930, 28,000 to 30,000 horses were exported annually. In 1931 only 16 000 were exported. It may be stated that the tendency to autarchy as regards horses is losing its hold in countries unsuited to horse breeding. There is moreover a marked increase in the demand for horses in countries where horse breeding is favoured by natural conditions, such as in Hungary. In 1932 the export of horses was higher than in 1931: in the first 10 months the figures for the total of the previous year were almost reached. (*Közleltek*, Budapest 1932, n. 101-102).

## CATTLE

SLAUGHTER OF COWS IN DENMARK TO RELIEVE THE MEAT MARKET. — According to information in the *Blätter für landwirtschaftliche Marktforschung* (Berlin, November 1932) it is intended to slaughter 14,000 dairy cows in Denmark for the production of meat meal. In consequence of difficulties of export the price of beef cattle has dropped enormously in Denmark, which is a large beef producing country owing to its large stock of dairy cattle. The meat supply exceeds the requirements of the country so it is intended to relieve the market by compulsory slaughter of 14,000 cows. So long as good profits were being made by the peasants from marketing butter and bacon the returns from the sale of cows going out of milk did not play a large part in the general farm returns. The cows had already been of little value in the preceding years so that their sale for a low price did not alter greatly the income of the dairies. Now the returns from the sale of butter and bacon have fallen so low that the Danish peasantry finds it necessary to sell the animals better.

For the purchase of cows for slaughter it is proposed to use money set aside for exportation of other products, such as butter.

The writer is sceptical about the value of this measure which in his opinion will serve only to displace revenue from other branches of farm production

**RESULTS OF THE CROSS-BREEDING OF KALMUCKE, HEREFORD AND SHORTHORN CATTLE IN THE U. S. S. R.** — Crossbred and purebred Kalmucke cattle were divided into three lots for feeding experiments. It was clear from the results that both the crossbreds and the purebreds gained in weight from more intensive feeding. The Kalmuckes however responded more markedly to the more intensive feeding, though they remained inferior in weight to the crossbred animals. Thus it would appear that cross-breeding the Kalmucke cattle is an effective means of increasing the weight and rate of fattening of cattle in the U.S.S.R. It is thought that in the regions having a less favourable climate it will be advisable to use only first generation crosses, but in the more favourable regions crossing may aim at the substitution of the Kalmuckes by Herefords and Shorthorns (*Z. Skotovodstvo*, 1932 7-15)

**USE OF GREASE IN MILKING** — The Animal Husbandry and Dairying Institute of the University of Leipzig has experimented with different kinds of grease for lubricating the udder or teat during milking. It has been proved that the use of these fats, which are very cheap, results in a certain increase in the butter fat content of the milk. But the outstanding advantage consists in the reduction of the germ content of the milk. Milk obtained with the use of grease contained only one sixth of the germ content of the control sample. (*Züchtungskunde*, Göttingen, 1932, Bd. 7, H 11.).

**DAIRY-HERD TESTING IN NEW ZEALAND** — Some interesting figures are reported in a review of the 1931-32 season by W. M. SINGLETON, Director of the Dairy Division, Wellington in the *New Zealand Journal of Agriculture* (October 1932).

The number of cows milked in the Dominion in 1931-32 was about 5.3 % higher than 1930-31. The number of cows under test, however, decreased in the same season

*Number of cows tested twice or more and percentages of total cows in milk.*

	Cows tested	Percentage of total cows in milk
1927-28 . . . . .	224,150	18 0
1928-29 . . . . .	259,594	20 1
1929-30 . . . . .	283,731	20 4
1930-31 . . . . .	271,404	18 0
1931-32 . . . . .	259,857	16 4

The average butterfat production of each tested cow decreased from 253.61 lb in 1929-30 to 241.05 in 1930-31 and 236.87 lb in 1931-32. This drop of the production was due, according to the writer, to an adverse season climatically, to a decreased use of fertilizers during the preceding season, to an increase in first calvers as the result of more cows having been brought into milk and to non-culling or less culling, because of the attempt to obtain a maximum total production.

## SHEEP AND GOATS

**SHEEP RAISING IN ITALY AND THE CRISIS.** — Sheep breeding in Italy has been very seriously affected by the crisis. The results of the 1930 census show a drop in the numbers of sheep of 18.6 % as compared with 1926. A. GODOLA, in the *Italia agricola* (Piacenza, 1932, Anno 69, N. 7), expresses the opinion of a number of competent experts on the subject. Since the date of the last census the head of sheep has again appreciably diminished. In addition to the adverse conditions on the market a further reason is the reduction in the natural pasture land available for grazing as a result of the land improvement schemes.

The writer is of the opinion however that the old system of sheep raising should be replaced by more intensive methods on the cultivated land, and that it would be a serious matter for the national economy if the sheep raising industry were to be allowed to decay. The article cited contains, in addition to such general considerations, a detailed account of the sheep farming in the different provinces of Italy.

**THE WORLD'S MILK YIELD RECORD FOR GOATS.** — The record is now held, according to the *Revue de Zootechnie* (1932, No. 8, p. 77), by an English goat ("Champion Springfield Precocity") which in 365 days of lactation gave 2265.420 kg of milk. The mean daily yield was 6.249 kg, and the maximum 7.444 kg. This figure is below the record of the goat "Champion Himsical of Westons" which gave 9.681 kg.

## PIGS

**ENCOURAGEMENT OF POTATO PRODUCTION AND PIG FATTENING IN AUSTRIA** - At a Conference held in December at the Ministry of Agriculture in Vienna the authorities concerned with the promotion of crop production in Austria discussed various problems of farm production

Seeing that fodder crops do not give sufficient returns to growers it is to be expected that there will be a general reduction of the acreage down to forage. Spring wheat can be expected to replace it only to a limited extent and it is probable that there will be a considerable increase in potatoes. The authorities concerned will therefore take the necessary steps to ensure that the surplus shall be converted into ensilage for use in the summer months. These measures are of as much importance for pig farming as for the utilisation of surplus stocks of potatoes. It is to be hoped therefore that the supply of native pork pigs will be more regular (*Agrarische Nachrichten-Zentrale*, Wien, 15 décembre 1932).

**INFLUENCE OF IRRADIATED YEAST ON GROWTH OF PIGS.** — Yeast treated with ultra-violet radiation (*bestrahlte Hefe*) had a very favourable effect on the growth of pigs in a fattening experiment carried out by GAERTNER and GAERDE at the Zootechnical Institute of the University of Jena (*Landwirtschaftliche Jahrbücher*, 1932, 75 Bd. H. 5, S. 751-772). The irradiated yeast was proved to be a feed with high protein value, the use of which is practical and beneficial.

## POULTRY.

**PREPARATIONS FOR THE WORLD POULTRY CONGRESS (ROME 1933).** — At the beginning of November the members of the World's Poultry Science Association met at Rome to discuss with the Italian Executive Committee appointed for the next Congress

the organisation of the Congress and the Poultry Show. The meeting was held at the Ministry of Agriculture and Forests in Rome, with Mr. W. A. KOCK, President of the Association, in the chair. Representatives of Germany, Denmark, France, Great Britain and the Netherlands were present and the Italian Committee. Among other things the titles of the general reports to be presented at the Congress by reporters appointed by the Committee were arranged. It was decided to limit the number of communications to 80, which were distributed among the various countries. After the meeting the members visited the Market of Trajan where the World Poultry Show is to be held.

**A METHOD OF ESTIMATING THE MEAN ANNUAL EGG WEIGHT.** — The market value of an egg is determined by its interior quality and its size. Birds with very high production records may have produced eggs of a relatively low market value because of a high proportion of small eggs. Also, from a breeding standpoint large egg size is desirable since it is well established that large eggs produce large chicks. Consequently, the value of a hen should be judged not only by the number of eggs which she lays but also by the weight of her eggs. A J. G. MAW and W. A. MAW of the Macdonald College P. Q. secured data from records of 74 Single Comb White Leghorn pullets in order to find a method of estimating the mean annual egg weight. From their calculations the writers conclude that there is a gradual increase in the weight of the eggs laid by the pullets of this flock up to the end of the first year. A considerable number of birds fail to lay eggs of standard weight (56.7 grams) during the first year. Birds whose first ten eggs average less than 47.50 grams are not likely to lay eggs of standard weight. The weighing of the first ten eggs laid in the fifth month gives a reliable estimate of the mean annual egg weight (*Scientific Agriculture*, Ottawa, 1932, No. 5, pp. 281-286).

## Agricultural Industries.

### Industries of Plant Products.

**USE OF POTATO FLAKES IN THE PREPARATION OF YEAST.** — In the preparation of fresh yeast about 10 kg of sliced potato are mixed with 3 kg of green malt in 45 litres of water at 65° C. The temperature is raised to 95° C, then reduced and kept at 70° for 15 minutes. At 65° C 20 to 30 kg. more of green malt are added and the mixture kept at 62-30° C for 60 to 90 minutes. By this process sufficient available protein is obtained for the growth of the yeast, even if maize or rice or some other nitrogen-poor material is used, and there is normal acidification of the mass (*Zeitschrift für Spiritusindustrie*, Berlin 1932, Jahrg. 55, S. 201).

**VITAMIN B AND D CONTENT OF DATES RIPENED IN THE TROPICAL SUN** — The average composition of dates in the vicinity of Biskra (Southern Algeria) is approximately: stone 6.5-7.8 gr.; pulp 74-79 gr.; total weight of fruit 81-87 gr. With a moisture content of 23.85 the reducing sugars represent 40.20 %, saccharose 26.12 %, cellulose and other matter 7.22 % of the fruit, while nitrogenous matter (1.43 %) and ash (1.18 %) occur in very small quantities. The experiments of R. LECOQ showed that the pulp of muscat dates is practically without antirachitic action and that vitamin B is present in insufficient amount to ensure over a long period the assimilation of the glucides which form so large a part of the date pulp.

(*Comptes Rendus des Séances de la Société de Biologie*, Paris, 1932, n° 31).

IMPROVED FERMENTATION AND ELIMINATION OF THE TOXIC PRINCIPLES OF TOBACCO. — A process patented by A. SCALVINI (U. S. P. 1,843,364-2.2.32) which uses a 3 % solution of hydrogen peroxide for checking harmful fermentation and one of I. TRAUBE (B. P. 371,092-17.3.31) for holding and facilitating the transformation of the toxic principles by means of silico-gel containing ferric compounds and acting as a filter without spoiling the aroma and characteristic qualities of the tobacco, are of interest for solving the old problem of how to produce good smoking and snuff tobacco which shall be as far as possible free from toxic principles (nicotine, etc.).

(*Chemistry and Industry*, London 1932, Vol. 51, No. 49).

CLARIFICATION OF WINES AND FRUIT JUICES BY MEANS OF AGAR-AGAR. — Agar-agar has been successfully used for clarifying wines and musts instead of gelatine. But for treating sweet concentrated juices it is of less value.

(*Zeitschrift Untersuchung Lebens-mittel*, Berlin, 1932, n° 64)

REFINING COCONUT OIL. — Instead of using the ordinary rapid-acting filters the new process of refining used by the Government Department of Bengal consists of slow filtering by the force of gravity through different layers of acid-washed animal carbon. The best results are obtained by using next potassium bicarbonate and NaOH + Na, to produce simultaneously elimination of the colour and odour of the oil and saturation of the acidity. Sodium silicate also gives good results, but the final product does not keep well. For deacidification of coconut oil the best practice consists in eliminating the remaining acid and unprecipitated mucilaginous matter by means of a mixture of precipitated aluminium and sodium aluminate in the proportion of 3:1 and washing with a saturated solution of NaCl

(*Chemical Age*, London, 1932, n° 702).

G. S.

THE FLAX PROBLEM IN POLAND. — M. ROMAIN SIŁWA in *L'Est européen agricole* of October 1932, recommends actively encouraging spinning and weaving as a home industry, for in this way large quantities of flax fibre could be utilised with little financial outlay. There exist in Poland about 1,200,000 hand spinning wheels and about 600,000 hand looms. A single spinning wheel can handle 10 kg. of thread per month and 30 kg. in the 3 winter months. Thus the domestic industry could spin from 30 to 45 thousand metric tons of thread (from 50 to 75 thousand tons of fibre) and supply 100 to 150 million metres of homespun linen.

G. R.

YUCCAS FOR FIBRE AND CELLULOSE. — It has been thought for a long time that textile fibres similar to those obtained from aloes might be extracted from the various species of *Yucca*.

The culture of *Yuccas* in Europe is easy. The fibre can be used for all purposes for which the fibre of aloes is used. But research carried out recently at Berlin shows that cellulose from *Yucca* is not yet to be compared with that from other plants in the manufacture of nitro-cellulose, artificial silk, etc. The content in cellulose is inferior to that of flax, the fibre approximating more in this respect to jute.

(*Fils et lissus*, Quebwiller, 1932, No. 6)

G. S.

## Industries of Animal Products.

**TOWN MILK SUPPLY IN THE UNITED STATES.** — In the *Schweizerische Milchzeitung*, No. 61-65 (1932) R. BURRI, Director of the Federal Establishment for Bacteriology and Dairying of Liebefeld-Bern, gives a survey of the impressions he received during a tour undertaken for the Bureau of Health of the League of Nations.

Legislation relating to the town milk supply varies considerably from State to State in North America, particularly as regards grading. In addition to first quality certified milk there are three other grades of raw and pasteurised milks. Those apposed to this system hold that only grade *A* should exist and that grades *B* and *C* should be eliminated from the market. The American Public Health Association aims at providing the towns with a supply of certified milk, though allowing the time necessary for the producers to reach this standard by degrees. The writer noted that control is widely applied and inspection frequent in the United States and that for the most part grading is according to bacterial content.

Department of Agriculture statistics which show that the gross receipts of the farmers are 2.4 milliards of dollars, give an idea of the importance of dairy production in the United States. Of the total milk produced 47 % is consumed as such, 36 % made into butter, 4 % into cheese, 4 % is used in ice cream, 4 % in the condensed milk industry and 5 % for other purposes. Nearly half the total production is thus consumed as milk.

The cowsheds for the most part impress the European visitor favourably with their cleanliness, their numerous windows allowing access of light and beneficial solar rays, and with the ingenious devices for aeration and fly control with which they are provided. For hand milking the dry hand method is used, which from a hygienic standpoint is undoubtedly above criticism. As regards machine milking it may be said that in the United States this method has already come into use, whereas in Europe as yet it can be said only that it may gain ground. Machine milking is, however, the ideal system because, if all is in order, the milk is protected from any outside contact and can contain no germs other than those occurring in the secretory gland. Each farm in America has a special small building for the filtering and cooling of the milk. There are various forms of cooling plant, but whether the installation is modern or not the milk is cooled to 50° F (10° C), which is the temperature required in general by the regulations in force. It is noteworthy that in America the necessary disinfection of the containers, particularly those in metal, is usually effected with steam or chemical antiseptics in order to ensure complete disinfection.

Of the milks on the market certified milk, i. e., first grade raw milk, is controlled by the most strict measures, because it must be used for infants and invalids. In America it is said that the certified milk is the purest that science and money can produce. It is machine-milked with all the necessary hygienic precautions. The labour employed must not only show a medical certificate but is obliged periodically to submit to medical examination. The cows must be in a healthy condition and their milk must not contain more than a certain maximum content of bacteria from the mamellary gland. The milk is received into sterilised and cooled receptacles and is transported as rapidly as possible to the consuming centre. The consumption of certified milk is about 1 % of the total milk consumption, which results from the high cost of production. This milk is thus not within the means of all purses and in spite of its high food value it remains a luxury product. For the mass of the consumers the milk must be both hygienically safe and low in price. Ordinary raw milk presents too many sources of infection, particularly in a country such as America where transport is over long distances and consumption is not immediate.

Amongst the disease germs contained in milk should be cited primarily that of tuberculosis. It has been attempted to eliminate this source of infection by putting into effect a scheme for culling all cows giving the tuberculin reaction. In addition to tuberculosis there are other diseases not specific to cows which may be transmitted to human beings by milk, such as typhoid fever (*Paratyphus*), typhus, dysentery, scarlet fever and malignant inflammation of the throat. Further, the udder may sometimes contain and secrete micro-organisms harmful to man without the cow showing any symptoms of disease.

American health specialists are primarily concerned to provide the towns with a safe milk supply, which would seem to be possible with pasteurisation of milk intended for direct consumption, as shown by experiments carried out in a number of institutes and laboratories. There are various processes for pasteurising milk. The temperature required to kill tuberculosis bacilli in milk heated for 30 minutes is 140° F (60° C), but in practice it has been thought preferable to fix the temperature at 145° F (62.5° C). This is termed the 'holding process' in America. Pasteurisation has been introduced in various forms in the last twenty years. Now the Public Health authorities recommend allowing the use of high temperature pasteurisation ('flash process') on condition that each particle of milk is submitted to a minimum temperature of 160° F (71° C) for 15 seconds.

The sale of milk in bottles is usual in most towns, specially for pasteurised milk. The ideal is the white glass bottle, which has no drawbacks but its high cost and its weight. Carton containers have been tried, the weight of which is practically negligible, but they have the inconvenience of being opaque. For this reason glass bottles for pasteurised milk have become general. The sterilised bottles are filled and closed by machinery as rapidly as possible, so that the milk reaches the consumer in the state in which it issued from the pasteuriser. To avoid all danger of infection between pasteurisation and consumption it would be well to pasteurise again the filled bottle, but unfortunately this still presents too many technical and economic difficulties.

Retail sale of milk still exists in the large towns such as New York to a considerable extent (38 %). The milk sold in this way is almost exclusively grade B milk and is sold in the poorer districts of the town. It is evident that this milk cannot satisfy hygienic requirements, but the sale has been allowed up to the present solely on account of the high cost of the safe milk. In all probability, however, this type of milk will shortly disappear from the market.

The price of the milk is naturally the kernel of the problem as it affects the producer, the dealer and the consumer. In the large towns the milk trade is in the hands of a few large firms. There are a number of systems of fixing the price.

In America the problem of town milk supply requires the collaboration of all the official and private institutions, though this is not always obvious at first sight. Among them the Bureau of Dairy Industry at Washington and the American Public Health Association play an active part. Also the Agricultural Colleges generally possess a dairy research department; the best known of these being that of the College of Agriculture at Geneva (N. Y.) and of Cornell University, Ithaca. One of the chief merits of these dairy research institutions and Government laboratories is that they are obliged to make known the results of their work so that the general practice may benefit. There are a large number of scientific papers and leaflets written in a lucid and temperate style that makes them accessible to the great mass of the public. Organisations of a somewhat commercial nature also work in collaboration with the scientific institutions, more particularly in relation to matters of legislation, dairying personnel, machines and standardisation. The most important of these organisations are the

National Milk Producers Cooperative Association, which has 300,000 members, the American Dairy Federation, which is made up of 17 different associations, and the International Association of Milk Dealers. Amongst the public health organisations should be mentioned primarily the National Dairy Council, the main purpose of which is to promote milk consumption among all classes of the population, particularly for young people. The American Public Health Association and the American Child Health Association have the same purpose in view. For the diffusion and control of the best milk there is the American Association of Medical Milk Commissions. Finally there is the International Association of Dairy and Milk Inspectors

E. G.

### Agricultural Training.

ORGANISATION OF THE MINISTRY OF AGRICULTURE IN CZECHOSLOVAKIA — The work of the Ministry of Agriculture is divided between the Cabinet of the Minister and 5 Sections

Within the competence of the Cabinet falls all the special business of the Minister's Secretariat including staff and budget questions, legislative matters, general information, and the control of the buildings and the library of the Ministry

Section I is responsible for questions concerning agricultural training (the higher schools of agriculture, forestry and veterinary science are administered by the Ministry of Education), agricultural councils, professional agricultural associations, agricultural cooperative societies, agricultural insurance societies and the regulation of farm labour conditions and workers' accidents

Section II is responsible for technical questions concerning the management of watercourses, land development, reparation of lands, farm buildings, agricultural machinery and the organisation of the public service of land tenure improvements

Section III is occupied with the general supervision of agriculture and animal husbandry and the State Veterinary Service

Section IV is responsible for questions relating to trade policy. These include trade and tariff conventions with foreign countries (legislation concerning trade policy), exploitation of agricultural products in general, exportation, tariff questions, transport rates, statistics (all statistics, including agricultural statistics, come within the province of the Statistical Office of the Republic of Czechoslovakia which is directly dependent on the Cabinet of the Ministerial Council), questions relating to quota systems, to the grain exchange, to exhibitions and to the agricultural information service. Section IV is also responsible for questions concerning the forests, game and hunting, protection of landed property, the rural police service, the protection of animals useful to agriculture, reform of agricultural land tenure (questions of general land tenure reform are however in the hands of the special National Land Department under the Cabinet of the Ministerial Council), the Institute of Farm Accountancy and Economics, the protection of natural monuments and promotion of the amenities of rural life. Within the jurisdiction of this Section fall also all questions of water and fishing rights from the legal standpoint and questions relating to the State Forest Inspection and Police Service

Section V consists of the central administration of the State forests and lands, which are upwards of a million hectares in extent, the State fish ponds and several agricultural industrial establishments (*Publication of the Ministry of Agriculture of the Republic of Czechoslovakia, Prague, 15 November 1932*)

G. R.



### Agricultural Research.

**INSTITUTE FOR AGRICULTURAL CHEMISTRY OF THE AGRICULTURAL UNIVERSITY OF BERLIN** — The Institute was founded in 1881. It is maintained by the State of Prussia, the Agricultural Chamber of Brandenburg and Berlin. The acreage of experimental land is 25 ha, the soil is sandy loam. The Director is Prof. O. LEMMERMAN. The



FIG. 1 — Institute for Agricultural Chemistry of the University of Berlin.

Institute is concerned with general research on plant nutrition, soil science and fertilisation. It has published a number of works and issues the *Zeitschrift für Pflanzenernährung, Düngung, und Bodenkunde* (Review for plant nutrition, fertilisation and soil science). The correspondence is in German. The Agricultural Experiment Station of the Agricultural Chamber of the Province of Brandenburg and Berlin, which was founded in 1857, forms part of this Institute.

**EXPERIMENT STATION OF PUERTA DE DIAZ.** — This Station was founded in 1930 and is situated in the Province of Salta in Argentina. It serves the valley of Lerma Salta, which is a region with a dry temperate climate. The monthly budget of the Station is 1500 pesos and is assured by the Government. The land covers 450 ha, of which 100 are for experimental purposes. The Director is M. MIGUEL O. MINTZER. There are two assistants. The Station is at present studying a scheme for irrigating the semi-arid zone of the Lerma Salta. It is also interested in the technology of tobacco, cotton, maize

and fodder plants, in forestry studies and silviculture. Recently the Station has been concerned with the determination of the critical sub-periods in the growth cycle of various crops in connexion with irrigation. It has produced new tobacco varieties: "Hoja Ancha", "Tallo Blanco 500", etc. An annual report is published on the Station's work; other publications appear in the daily paper "*Nueva Epoca*" of Salta and the reviews "*Paginas Rurales*" and "*Pampa Argentina*" of Buenos Ayres. The correspondence is carried on in Spanish, Italian, French or English.

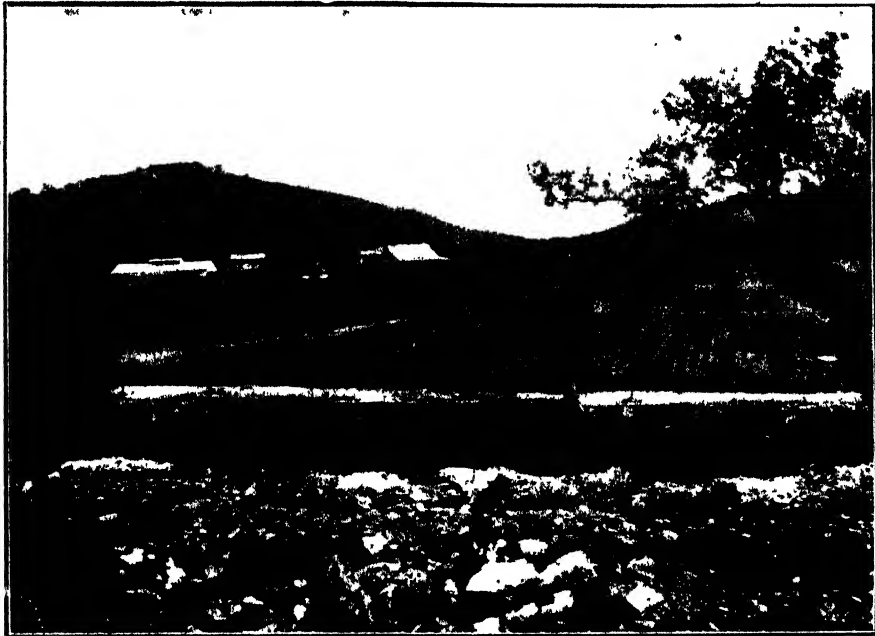


FIG. 2. — Panoramic view of the Experiment Station of Puerta de Diaz, Salta, Argentina.

FEDERAL SEED TESTING AND CONTROL, ESTABLISHMENT OF LAUSANNE — This was founded in 1898 and serves Western Switzerland (Cantons of Geneva, Vaud, Valais, Neuchâtel, and parts of Friburg and Jura). It is maintained by the Federal Exchequer and its budget in 1932 was 121,641 Swiss francs. It has no experimental land of its own but uses privately owned land put at its disposal in the various districts within it, province. The staff consists of 15 permanent and 3 seasonal members, under the Direction of M. G. BOLENS. The equipment comprises complete installations for seed analyses and germination tests, a laboratory for selection of crop plants, a laboratory for phytopathology and recording photography, and miscellaneous cultural implements. The present plan of work includes improvement of yields by selection of agricultural and industrial crop plants (tobacco); experimental cropping; control of the trade in seeds; control of crop pests in Romansh Switzerland. The Station is more particularly engaged in the selection of cereals and leguminous fodder plants, tobacco, beet, etc., and in establishing a service of general information regarding the cultivation, improvement and diseases

of the staple crops. Control is effected free of charge for firms and agricultural organisations. The results of the work are made known by practical demonstrations on the trial plots, by its information service, by the press, by correspondence, telephone and wireless. Selected plants and seed are distributed. Its reports are published in the "*Annuaire Agricole de la Suisse*". It is the only Federal agricultural experiment station in Romansh Switzerland.

D. K.



FIG. 3 — Federal Seed Testing and Control Establishment, Lausanne.

### Rural Hygiene.

**HYDROCYANIC ACID** — An account of the properties and principles of application of hydrocyanic acid is given by G. H. BUCHANAN in the November (1932) number of *Chimie et Industrie*. Fumigation by means of gaseous hydrocyanic acid for the destruction of insect pests was introduced into California in 1886 by COQUILLET. The gas was obtained by the action of sulphuric acid on sodium cyanide. In 1917 liquid hydrocyanic acid replaced the gas as a result of the work of William DINGLE who founded at Azusa in California the first liquid hydrocyanic acid factory.

Liquid hydrocyanic acid when well prepared is colourless, the specific weight at ordinary temperature is 0.7; purity of the commercial acid 96-98%; boiling point, 25.6° C. The low vapour tension allows of transportation in containers of a comparatively light metal. Each tinned iron cylinder contains about 37 kg of liquid and weighs in all 106 kg.

Fumigation of trees is carried out by covering the tree in a tent of cloth and pumping in the acid with a special pump which gives an exact quantity to each tree corresponding to 150 or 250 c. c. of liquid hydrocyanic acid.

Hydrocyanic acid gas is an extremely dangerous poison acting by paralysis of the respiratory centres. Hence it is necessary when the proportion of toxic gas exceeds 100 parts per 1,000,000 parts of air to use a gas mask

Among other uses of hydrocyanic acid may be mentioned the treatment of products such as cotton, and a number of chemical reactions (formation of aldehydes)

G. R.

## Forestry.

RECENT EXPERIMENTS IN THE UNITED STATES ON OLEORESIN TAPPING AND IN THE SELECTION OF THE TREES. — It is of the highest importance to maintain in good condition the pine forests utilized for oleoresin tapping and to adopt approved methods in order to secure a good yield of resin in view of the growing value of the different chemical products which are the result of this industry.

Miss E. GERRY of the «Forest Products Laboratory» of Wisconsin has reported on a series of experiments carried out during a period of five years in forests of long leaf pine (*Pinus palustris*) in Florida and a description of her work is given in *Technical Bulletin*, No. 262 U. S. Dept of Agric, Washington D C The Bulletin contains 24 pages and is fully illustrated with photographs and diagrams The results of these experiments have clearly shown that a slight reduction in the height of the chip periodically cut is a valuable means of eliminating waste and conserving tree energy and power of production Low chipping of approximately a quarter inch showed distinct improvement upon the higher chipping of approximately one half to three quarters of an inch generally adopted in America up to the present time During the five-year experimental period in the Florida forest as high a yield of resin was obtained from the low faces as from faces twice as high, thus nearly doubling the potential yields per face. The low faces also gave yields of higher quality for certain mechanical reasons and the value of the timber was thus improved This method tends to reduce waste and is particularly serviceable in the case of young trees required to produce resin over a long period

A microscopical study of the wood and bark of the test trees taken at different heights showed that the low chipped trees, when compared with the high chipped, had wider rings of annual growth, better developed summer wood and considerably more abundant resin-giving tissues immediately above the faces

Little information has hitherto been available on the subject of the direct effects of forest fires on resin production and so far as is known none at all on their effects on the cell structure of the woody tissues of the trees In the *Journal of Agricultural Research* (Washington D C 1931, No. 9, pp. 827-837) Miss GERRY gives an account of experiment carried out by the Forests Products Laboratory, during the period 1926-1929 with the object of ascertaining the results of fire on resin yield and on growth in a young stand of long leaf pine (*Pinus palustris*)

This variety is relatively resistant but Miss GERRY has clearly shown that even a slight fire, starting on the ground surface, which destroyed the foliage but not the buds, and followed in many cases by recovery, was responsible for a loss of about 50 % in resin yield during the first year. The pines which survived the fire however made a rapid recovery and, during the second and third years after the fire, this yield was nearly equivalent to that of the trees that had not suffered at all.

The percentage of yield by the fire-affected trees as compared with that of the undamaged trees was 60.7 %, 96.7 % and 95.2 % for the years 1927, 1928 and 1929 re-

spectively These figures do not include the trees that actually died in the end or became dry faced.

The microphotographs obtained by the writer, showing the annual rings, demonstrate very clearly the reduction in wood production of the fire damaged trees. A comparison between the annual rings formed during the three years subsequent to the fire reveals that the woody increment in the feeblest tree that had escaped scorching was nearly as great as that of the strongest trees that had suffered. A microscopic examination of the specimens from the scorched long leaf pines that survived gives tangible evidence of the native vigour of this species in recovering after fire damage, as shown by its ability to build wood cells and to give a high yield of resin even when the mischief has been quite serious

Without in any way detracting from the value of these special studies, it may be remarked that in order satisfactorily to determine the natural laws to which resin production is subject and to gain knowledge of the principles on which capacity for resin production depends, further experiments are still necessary. For example, although well developed annual rings and numerous resin passages are usually associated with a high rate of yield, exceptions to this rule may occur which seem to require explanation Thus drastic injury to a tree may cause copious resin yield at the expense of wood formation and heavy exudations may occur in trees with poorly developed resin passages, while again in exceptional cases what appears to be good resin tissue may produce little or no resin It is also clear that similar field experiments should be made in other countries in natural conditions resembling those of the area to which the results are to be applied.

R. W

RECENT FORESTRY PROGRESS IN CHINA — According to an article contributed by W. C. LOWDERMILK to the Journal of Forestry (Washington 1932, No. 7), despite political and social disturbances, forestry has been making steady progress in China in recent years. Since the establishment of the National Government at Nanking, the responsibility for the administration of forestry work has been entrusted to the Forestry and Land Reclamation Service, which has been appointed with the object of reclaiming and colonizing waste lands in China, of carrying out the general forestry administration of the country, the supervision of the afforestation areas, the protection and management of national forests, the establishment of national parks and protection forests, etc.

The recommendations of the National Forestry Conference have been taken as a guide for forestry work in the various provinces.

Afforestation by the Central Government is under the direction of the Central Forestation Bureau, at present engaged in establishing a model forest in the neighbourhood of Nanking, which represents the initiative of a policy of instituting national forest reserves throughout China. In the course of the first two years of the Bureau's existence, some seven million trees have been planted in the vicinity of Nanking. Government nurseries are provided for the gratuitous supply of tree plants. Forestry work in the provinces has been vigorously pursued for some time past and some provinces possess strong forestry departments.

To private initiative and corporate effort must be attributed much of the most important forestry enterprise of China. The continuous provision of important supplies of Foochow pole (*Cunninghamia lanceolata*) for the timber trade throughout the country and also of wood for fuel is almost entirely dependent upon the activities of private persons. As the result too of corporate action, the Kiangsu Forestry Training Institute at Lao San, which has now been maintained for 15 years, has planted upwards of 54 million trees and has thus converted a large grass highland area into a beautiful forest.

Public interest in forestry has been largely fostered by the Chinese Forestry Association which was founded in 1917, by the teachings of Dr. Sun Yal Sen and by the institution known as the Forestry Memorial Week.

Public instruction in forestry in China was initiated in 1911. At the present time there are four Colleges and Universities which train for degrees ; among these the University of Nanking has the largest enrolment of students.

R. W.

FORESTRY IN THE STATE OF VICTORIA IN AUSTRALIA. — A Forestry Department, under the name of the Forests Commission of Victoria, was established in 1907, which eleven years later was reorganized and as far as possible made independent of political influences.

The Commission is mainly concerned with ; (1) scientific methods applied to the forests of Victoria ; (2) afforestation work on a sufficient scale to render unnecessary the further importation of conifer timber ; (3) forestry research.

The total afforested area of Victoria is about 15 million acres but only a third can be utilised profitably. Eucalyptus varieties, of which there are no less than 200 suitable for different soils and climates, form the most important element in the numerous species of trees to be found in the Victorian forests. Some of them, such as *Eucalyptus incrassata*, *E. dumosa*, *E. oleosa*, etc are only to be found as dwarf forests in the dry plain lands of Millowa Mountain Ash (*E. regnans*) on the other hand reaches a height of over 300 feet in the mountains to the east of Melbourne

Unlike the majority of the other forest species in Australia, Redgum (*E. rostrata*) is generally found in pure stands only. The chief forests of this variety are situated in the neighbourhood of the Murray River, where the annual rainfall is too scanty, in view of the very high summer temperature, to maintain valuable forests in good condition, if the river did not overflow its banks annually, its flood waters being distributed over wide tracts of land by a system of naturally formed channels

The best stands of Red Gum are to be found on the lower plains which are flooded regularly each year and are regarded as first quality trees. Second quality trees grow on the higher lands which are regularly flooded, except in particularly dry years, while the trees classed as third quality are to be found where inundation takes place only in years which are exceptionally humid. When a stand reaches the utilisation stage, i.e., when the trees have a diameter of about 27 inches at breast height, the first, second and third qualities will show approximate heights of 100, 90 and 65 feet respectively

The Red Gum forests are very liable to fires, but this variety as a rule makes a good recovery, hence it usually happens that the forests are rather damaged than destroyed.

The Commission is particularly anxious to institute a good system of management for the Red Gum forests and therefore concentrates its attention mainly on the first quality trees. The mature trees are systematically exploited in all the stands and the young spinneys regularly thinned, the unsaleable refuse wood and litter being burnt and the trees that are over ripe for felling are destroyed by girdling.

Red Gum timber is too heavy for floating down stream and is therefore transported either by water in lighters during the flood months or by land, using animal traction. The wood gives excellent sawn timbers and sleepers and, being very heavy and tough and at the same time maintaining its condition well when embedded in the soil, it is very serviceable for bridge and platform building, etc. and also for telegraph poles.

Australia has no native pines and no species of European conifer is to be found among its indigenous trees. The most important Australian conifers belong to the *Araucaria*, *Callitris*, *Dacrydium*, *Agathis* and *Podocarpus* species. Of these *Callitris robusta* or

Murray Pine alone makes stands of any considerable size. The Murray Pine is one of the most valuable trees in the North-West part of the State, which is barren, dry and largely treeless with an exceptionally low annual rainfall.

During the last 10 years the region where the Murray Pine is to be found in large pure stands has been transformed into large scale wheat lands and it has been necessary for the State to retain the chief remaining stands in order to avoid the mischievous consequences of the disappearance of the forests, such as, e. g., shifting sands, etc.

*C. robusta* is rarely more than 70 feet high and grows either in mixed stands or in combination with *Casuarina lepidophloia*. It is a very slow growing tree and its timber is highly valued as it is almost white and proof. Regeneration is a difficult matter because of damage by rabbits, which have been introduced by the settlers in huge numbers.

The Mountain Ash is another valuable species which flourishes best on mountain soils and forms timber resembling that of the normal ash. It is chiefly to be found in the districts to the east, north-east and south-east of Melbourne, where there is an annual rainfall of from 40 to 60 inches, at altitudes of 600 to 3000 ft. and has a rapid growth. At altitudes of 3000 to 4500 ft. the best stands of Red Mountain Ash (*E. gigantea*) are found. This is a large tree with timber resembling that of the Mountain Ash.

The average dominant trees in the stands of Mountain Ash are nearly 225 feet high and specimens have been found up to a height of 325 feet. The ordinary felling diameter is 8 feet which in very mature specimens may rise to 15 feet.

The working of the timber of the Forest Reserves is generally undertaken by private societies which lease the forest areas for a limited period. Since it is not possible to float Red Gum and Mountain Ash timber, it is necessary to utilize rail transport. The principal valleys are already provided with permanent railways, from which temporary tracks are carried to the felling areas.

In 1925-26 nearly 500,000 acres of State forest lands in Victoria were damaged by fire but five years later a large part of the burnt over area was already occupied by young spinneys, 30 feet high.

Mountain Ash timber is easily worked and valuable for building work and general purposes and is handled in greater quantities than any other forest species in Victoria. On an average a well managed Mountain Ash forest yields about 60,000 superficial feet of timber per acre.

Experiments have been carried out, mainly in the neighbourhood of the Kermadie River in Tasmania, with the object of ascertaining the value of Australian woods for paper making. The problem would appear to have been already solved as regards a number of species, including the Mountain Ash.

(Based on article by T. DAHLSTRÖM in *Skogen*, Stockholm, Nos. 3 and 18).

R. W.

FORESTRY PROBLEMS IN TROPICAL AFRICA WITH SPECIAL REFERENCE TO THE ITALIAN COLONIES. -- In a special study, bearing the above title, republished from the *Rassegna Economica delle Colonie*, issued by the Italian Colonial Office (Rome 1931, Nos. 9-10), Dr. Lorenzo SENNI, Consul of Italian Forestry Militia, gives in the first place a summary account of the chief ecological characteristics of Tropical Africa. Here, as a result of the general invariability of the temperature, the isotherms lying between 20° and 24° C., of the scantiness of the rainfall (about 12 inches) which is limited to two periods in the year only, and of the topographical conformation and geological structure of the land, plant growth is chiefly regulated by the water caught and retained by the soil and mainly takes forms which are typical of the steppe lands and depressions which are its main features.

The Italian Colonies in Africa have, generally speaking, a tropical climate. The following exceptions may however be noted: (1) the Djebel plateau in Cyrenaica, which is from 1,300 to 1,900 feet in height, where are to be found growths such as characterise the thickets in Southern Mediterranean Italy — (2) the high plateau of Eritrea, which reaches a height of over 6,000 feet, where the climate is such as to allow trees typical of the Abyssinian mountains to penetrate northwards — (3) Certain districts in Somaliland, specially on the banks of the Djouba or the low-lying lands between this river and the British Colony of Kenya as also in the neighbourhood of Barca and of Gash in Eritrea, where the most important forests have been established.

Forestry production in the Italian Colonies in Africa is on a very small scale and mainly takes the form of wood for fuel. The mediterranean forests of the Djebel area in Cyrenaica supply a certain amount of timber and some small experimental plantations of *Diospyros* have been started in Somaliland. Secondary forest products enter into long established native industries and include *Hyphaene* seeds and gum arabic in Eritrea and rubber in Somaliland. In any case however the production is insignificant in amount.

At the same time the question of the preservation of existing colonial forests is regarded as highly important and every effort is being made to enlarge them in view of market developments and improvement of the colonial agriculturist. A variety of requirements require to be considered. In Tripolitania plantations of *Acacia saligna* have been introduced successfully, mainly with the object of improving the soil. Wind screens and plantations for protection against salt winds have also been constructed with *Eucalyptus rostrata*, *Tamaris articulata* and *Cupressus pyramidalis*. In the Garian a start has been made with planting species specially suitable to prevailing conditions from the point of view of the production of fuel and timber for general use. In Cyrenaica reconstruction work is being carried out with a view to the improvement and development of the existing forests and wind screens are also being established. In Eritrea, where the forests are chiefly valuable as a means of protection against erosion, legislative measures are being adopted with the object of limiting the fellings of protective species. On the plateau plantations of *Eucalyptus* and *Casuarina* have been made with encouraging results. On the other hand in Somaliland improved forestry methods must have more regard to quality than quantity. The writer is also of opinion that with well developed plantations of *Casuarina* to serve as wind screens, it should be possible to satisfy local requirements for ordinary timber. The plantations of coconut palms should be further developed as also those of *Acacia mollissima* for the production of tanning barks.

The general forestry policy according to the writer should be to reclaim lands on which cultivation has been given up and to augment the cultivation of species which provide valuable raw material for industry. Hence further experimental work is very necessary.

S. C.

THE « BRIQUETTES METHOD » IN TREE PLANTING. — The great value of planting saplings with soil attached, despite its comparative costliness is, according to a writer in *Skogen* (Stockholm, 1931, No. 19) a strong argument for improving the present methods and reducing expense. The first experiments in this connection were made by BERNER, a Swede, who replaced the soil clods with small rectangular cardboard boxes, in which seed was sown and the young plant allowed to grow up to the desired size. During the growth period the cartons were packed close together, in boxes directly in contact with the soil, and were rendered damp proof and perforated in such a way that



they could be arranged so as to seal the apertures. When the cartons are palced in permanent position, the apertures enable the roots to penetrate the surrounding soil.

BAKKEN, a Norwegian Scientist, followed up BERNER's experiments with trials of a kind of briquette in which the seeds are sown in suitable soils. He treated his briquettes with paraffin to make them more resistant and a special machine has been devised for their manufacture.

TORKILDSEN, himself also a Norwegian expert, uses briquettes made of peat, cut in squares with holes filled with soil in which the seeds are planted. He has also constructed a special machine for making the briquettes which at the same time carries out the other operations. It is a very important matter to make briquette planting an economic possibility and it is believed that the expense can be kept so low that the system will not be more costly than those at present followed.

A completely automatic machine could turn out enough briquettes daily to allow them to be sold at a minimum price. Probably the methods of BERNER and BAKKEN are the cheapest; the BERNER cartons can be produced very economically with the special machine and in large quantities easy to convey from place to place. It may perhaps be difficult to make the BAKKEN briquettes sufficiently durable, at any rate, if what would seem to be the right amount of paraffin, only is used.

The automatic machine is likely to be a heavy first charge, but if it can work for a sufficiently long period during the year, it may be expected that the price of the briquettes can be kept relatively low. The seed planted in the briquette should only be allowed to germinate at the appropriate season; hence the briquettes themselves must be kept in suitable condition for sowing and those manufactured in autumn or winter must be maintained in such condition until the spring.

The transport of the briquettes will also always be an expensive matter and for reasons of economy, they must be moved, before the seeds have germinated, so that ordinary boxes may be used. The best way therefore would seem to be to convey the briquettes, before germination has started, to the place where afforestation is proposed and to leave them there until the young plant has reached the dimensions appropriate for permanent setting. Hence a kind of temporary nursery should be formed to accommodate the briquettes, in which the conditions, as regards light, sufficiency of moisture, etc., should be such as are required for the proper development of the seedlings.

The age at which planting out should take place depends as a rule upon the general character of the vegetation of the area for afforestation. Where there is little or no grass growth, the briquette may be introduced even before germination has taken place, whereas for a very grassy surface it is preferable that the plants should be at least three years old.

It is a matter of great importance that the soil in which the seedling in the briquette is to remain for three years should be of good quality, well sifted and free from pebbles.

It is recommended that a dibble of a special shape should be employed for planting out the briquettes and it is highly important that the briquette itself should entirely fill the space so as to leave no chance for the growth of fungus or mildews.

The carriage of the briquettes, when ready for setting, from the nursery to the forest area is also a delicate matter particularly for seedlings of a certain age. Hence the boxes in which the briquettes are placed should not be too large to be carried by hand.

A practical comparative test has been carried out which seems to indicate that plantation by the methods described above can effected at about the same cost as when ordinary methods are used. It is however necessary to experiment on a really adequate scale, before it will be possible to determine the relative advantages and disadvantages of the various methods and even after the experiments have been made, it will still not be

possible to fix the price of the machines. Further time is required before they can be standardized and made saleable in large numbers, an indispensable condition for keeping their price within due limits.

R. W.

**AFFORESTATION OF LANDS THAT HAVE GONE OUT OF CULTIVATION.** — In the *Journal d'Agriculture pratique*, Paris, 1931, Nos 11 and 16, JAGERSCHMIDT gives practical and detailed advice on the problem of the afforestation of lands which are no longer cultivated. A land-owner, when making a selection of lands for afforestation, should choose such as give but a poor return for cultivation, but he should also pay particular attention to their position, planting with trees for example those which are difficult of access even though the soil may be of fair quality and leaving for pasture other lots on which, though specially indicated for tree planting on account of the poverty of the soil, afforestation might interfere with the general farm arrangements.

In choosing the species to be used for the early stages of afforestation, it should be borne in mind that the following are the most resistant and easily grown according to the different types of soil:—

*Dry, flinty soils*: Scots pine and Corsican pine; where the climate is mild, the maritime pine; for certain mediterranean regions, the Aleppo pine and ilex.

*Damp, flinty soils*: The same pine varieties and spruce; sessile oak, hornbeam, chestnut, birch and locust-tree.

*Light, granitic soils*: The same varieties; on hill slopes and in the valleys, ash.

*Soils with a clay base*: Scots pine, spruce, sessile and pedunculate oak, hornbeam, chestnut, elm, locust-tree, alder and ash.

*Calcareous soils, dry and shallow*: Austrian pine; in the South, Aleppo pine.

*Calcareous clay soils*: Conifers in general; oak, hornbeam, locust-tree, maple, ash and fruit trees.

*Damp or drained marshy soils*: Spruce, Weymouth pine, alder, ash and poplar.

*Soils liable to flooding*: Alder, white willow, cypress.

*Heath lands*: Scots pine, and, where the climate is mild, maritime pine.

It will be noted that there are omitted from this list: (1) Douglas fir, on account of the relatively high cost of seed; (2) Larch on account of its liability, except in mountainous districts, to many diseases; (3) Beech and fir, because of the necessity for shelter in the early growth period.

When afforesting a number of plots, the writer recommends that they should not all be planted with the same species and considers that it is wiser to aim at establishing pure stands of different types or in any case, where conifers are used, to introduce a certain number of broad leaved trees in proportions that should never exceed 10-30 per cent. The presence of the broadleaved species will improve the soil covering of dead leaves which serves as fertilizer.

In the early stages it would appear that the cheaper way of afforesting waste lands is by sowing, but in the long run it will be found that the more economic method is that of plantation, which is the more likely to give ultimately successful results.

Direct sowing in the case of conifers (with the exception of Aleppo and maritime pines which are readily grown from seed) is not to be recommended. In certain conditions, however, e. g., where there is risk of destruction by rabbits which have a preference for plants arranged in rows or where there is a scarcity of labour, there is a justification for sowing. In such cases it is necessary, if Scots or Austrian pine is used, to prepare the ground for a simultaneous crop of oats. In the first the oats are sown and the ground harrowed; by the end of April or beginning of May, 8-10 kg. of pine seed should be sown per hectare and the roller afterwards applied.

The amount of seed used can be economised if, instead of broad casting, strips are made with the plough, preferably before the winter season, 30-50 cm. wide and at intervals of 1.5-2 m. The actual sowing should take place in the spring on the prepared ground, 5-6 kg. of seed being used per hectare.

It is advantageous for forest owners in the same district to form groups for the purchase of seeds, for in this way better kinds and better prices can be obtained and it is difficult for an individual working on his own account to control quality and place of origin.

Where plantation methods are followed, it is always desirable that they should be preceded by crop growing. As a rule the number of plants to the hectare should be about 4,500 planted in rows at distances of 1.5 m. with a similar interval between each row. In this way after some 12-15 years proper stands will be formed without any necessity for thinning.

Quite young plants are the best to use on clean and properly prepared soils, Scots pine, 1-2 years old and not transplanted, will give the best results. If however the land is much grassed over and has been abandoned for a long period, it will be preferable to utilise stronger seedlings and if possible transplants.

If a young stand has been raised from seed, it will be necessary after a few years to thin out and also to repeat the process later at intervals of 6-8 years.

R. W.

## BOOK NOTICES \*

ROEMER TH., et SCHETTER, F. *Ackerbaulehre* (La production des plantes. Berlin 1933, Verlag Paul Parey, 151 S., 72 Abb., 7 Farbtaf.

[According to the authors this work is not a manual but a treatise to act as a connecting link between science and practice. It particularly emphasises the interdependence between the various branches of agriculture, namely arable farming, stock farming and rural economy. While in practice this interdependence has never been lost sight of, in the desire for specialisation scientists have, on the other hand, often forgotten it.

The authors basing their facts on long practical experience and on large scale experiments carried on over a number of years on many crop plants, deal with the latest ideas of science and practice concerning the three main factors of agricultural production, namely, climate and weather, soil (tillage, fertilisation) and the plant (cultural treatment, harvesting). Here also the interdependence of various factors is emphasised. Special attention is paid to the relationship between climate, soil and plants, and the influence of all these on crop rotation. In connexion with the question of rotation the authors introduce lengthy economic considerations in the chapter dealing with the economic bases of rotation. The economic point of view is borne in mind also in the sections dealing with tillage and fertilising.

A special chapter is devoted to the question of animal versus mechanical ploughing. While explaining the scientific basic principles the writers always draw conclusions for application in practice. Detailed consideration is given to weeds and their destruction, based on the standard work of the Norwegian, Korsmo. This chapter, which has numerous illustrations and 4 excellent coloured plates, is of special interest at this

\* Under this heading are included short synopses of books received for review.

time when the question is not so much increased production as cheaper production of better quality products. The book will be of particular value to the farmer as it provides the information necessary for his requirements]

N. G

Van HALL C J J, *Cacao*, Second edition, London, MacMillan & Co Limited 1932, XVIII-514 pages, 176 figures

The first edition of this monograph appeared in 1914. The progress in the culture of the cacao plant that has resulted from scientific research since that time has made it necessary for the author to introduce extensive alterations in most of the chapters. It is thus practically a new book which is published by the well-known English firm in a characteristically attractive form. The chapter divisions remain unchanged. The arrangement is practical and the reader is provided with a very complete index.

Amongst the subjects which have taken on new aspects as a result of recent research may be mentioned the following:

The discovery of wild cacao plants in the interior of Surinam has elucidated the question of the original home of cacao. Dr. VAN HALL's book contains excellent photographs taken by Prof. STAHEL of the wild cacao trees he found growing there.

The cause of the inadequate setting of cacao fruits has given rise to much discussion. Recent researches by STAHEL and HARLAND have shown that the percentage of setting increases when small creeping insects such as ants and aphids, which carry pollen, are allowed access to the flowers. The author is however of the opinion that wind pollination may also take place.

The development of the embryo of the cacao is now well known thanks to the work of KUYPER, CHESMAN and HRYN. It does not present any special points of interest.

In the chapter dealing with the cultivation of cacao there is in this edition a full discussion of the best arrangement of the trial plots for manuring experiments.

Scientific selection of the cacao has been begun in Java, Trinidad and Surinam. The difficulties in the technique of budding having been overcome by means of a method invented by STAHEL it is now easily possible to propagate the mother trees vegetatively. Plantations made from the best clones or from seedlings from a good mother tree have given highly satisfactory yields as is shown by the figures of the experimental stations of Trinidad and Java.

The chapter on fermentation has also had to be completely revised as a result of the researches of ECKMANN, STEINMANN, BUSSE, HENNEBERG, FELLER, STEVENS, DEAN and KNAPP. It is a pity that the author has not been able to take into account also the recent work of CIFERRI.

Our knowledge of diseases and pests has also made much progress. Canker has been studied more thoroughly by HARTLEY. The problem of the Surinam witches-broom disease has been cleared up by STAHEL. This disease had been known since 1895 in Surinam and was found in Ecuador in 1922 and in Trinidad in 1928. The life history of *Sahlbergella singularis* has been studied by PATTERSON and COTTFRELL. The control of *Helopeltis* in Java has been the subject of a number of publications, as has also that of *Thrips*, which are troublesome insects in the cacao-growing countries of the New World.

Chapter X, which gives very complete information about the cacao cultivation of the different countries, is a valuable contribution. The statistics show the great changes that have taken place in the last fifteen years. Production has been transferred

from America to Africa, as is shown by the following figures. In 1915 the world production of cacao was 294 306 metric tons, of which 163 310 came from America and 124 485 from Africa. By 1930 it had risen to 478 583 tons, the increase being nearly entirely due to the African production which was 300 869 tons, or nearly double that of 1915, the American production increased only slightly, being 169 474 tons in 1930

The Gold Coast has occupied the first place among the exporting countries, Nigeria the third. This fact is particularly striking as the cacao cultivation is exclusively in native hands. It is thus not surprising that the author has been obliged considerably to extend the chapters on the African Colonies

The chapter on the characteristics of the marketable bean has been abridged. The author has not thought it necessary to develop this subject fully as a number of books dealing with the cacao industry and trade have appeared in recent years].

W. B.

*Annuaire des Ingénieurs agricoles* (1932-1933, 509 p, Paris, 5, Avenue de l'Opera, 1932)

[This Yearbook published by the national federation of old students of the National Schools of Agriculture (Grignon, Montpellier, Rennes) contains general information about the Schools and the careers open to trained agriculturists. There is also systematically arranged information concerning the organisation of each School, its association of old students and the posts held by old students. A general part, common to the three Schools, contains the list of the holders of agricultural diplomas and their special branches]

R. G.

*Génétique animale* par J. MARCQ et J. LAHAYE (Gembloux-Paris, 1932 (Encyclopédie agronomique et vétérinaire n° 9), 354 pp., 46 ill)

[The authors give an account of the Mendelian laws and summarise the still scattered literature, drawn mainly from foreign sources, on hereditary characters in man. Their analysis of the biological factor - by which they mean the study of normal and pathological heredity, of transmission of acquired characters, of the influence of environment, of inbreeding, etc - enables them to emphasise the relationship, which some regard as close, between Biology and Sociology]

S. T.

*Die Rindviehzucht in der Grenzmark Posen-Westpreussen*, par A. RINECKER Neudamm (Verlag J. Neumann), 1932, 290 SS., 57 Abb.

[Stockbreeding in this region underwent a complete reorganisation after the war. This book has been published on the occasion of the tenth anniversary of the founding of the Herdbook Society, but it is obviously still too early to be able to estimate the results of the 10 years' work. The author treats of the historical development of agriculture in the region, the development of stock farming and its present state. The organisation of the herdblocks and of dairy control and the other measures for promoting stock farming are described. Further chapters deal with the local methods of stock feeding, the dairy industry and the control of disease]

S. T.

*Generalità dell'Alimentazione del Bestiame*, par E. REGGIANI. Pisa (Nistri-Lischi, Editori), 1932, 223 pages

[A collection of lectures given at the Higher Institute of Veterinary Medicine at Pisa]

S. T.

*Die Zucht des veredelten Landschweines in der Provinz Scheleswig-Holstein* von Dr. PAUL FRINGS. Arbeiten der Deutschen Gesellschaft für Zuchtungskunde, Heft 54 Hannover (Verlag M. & H. Schaper) 1932, 77 SS.

[After showing the importance of the German improved breed (veredeltes Landschwein) in the pig breeding industry of Schleswig Holstein, the writer gives a historical account of the development of the breed and describes the agricultural conditions of the region and the measures taken to promote pig raising in the province. The principal part of the work is however the genetic analysis of the breed and the methods of breeding used]

S. T.

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# MONTHLY BULLETIN

OF

## AGRICULTURAL SCIENCE AND PRACTICE

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### EDITORIAL

#### **The Use of Phosphoric Minerals in Metallurgy and its Effects on Agriculture.**

A little over fifty years ago a discovery of outstanding importance was made in iron metallurgy. It was in 1878 that THOMAS and GILCHRIST developed their process for refining with a basic lining. The practical application of this important discovery in a few years completely revolutionised the old methods of steel manufacture, the organisation of the works and the labour problem. As the eminent metallurgist George CHARPY aptly said, the year 1880 marked the end of the iron age and the beginning of the steel age.

This would not seem necessary to recall here were it not for the entirely unexpected result that accrued. Up to that time the iron and steel industry had had no difficulties in the marketing of its products. The production of a bulky waste product such as the phosphorus residue presented an acute problem which had to be solved by the farmers themselves.

The use of the finely ground slag as fertiliser very rapidly became general, in spite of minor drawbacks such as danger for the workers in spreading if their respiratory tubes are not adequately protected.

It is more particularly in sour soils deficient in lime that basic slag works wonders as is readily explicable by its composition and its extremely finely ground condition.

The merits of basic slag are no longer disputed and it may be said that the reduction in tonnage recorded for some years past in the works is due rather to a serious falling off in steel working than to any lessening of confidence in the fertiliser on the part of the farmer.

The brief history of basic slag is at any rate full of instruction. It shows that a purely industrial change has had an important influence on agricultural development, specially in Europe, while farming in its turn has been a decisive factor in ridding the ironworks of a bulky by-product (2 to 2.5 quintals per metric ton of steel), whose utilisation is an important item in the general economy of the works.

At a time when the fiftieth anniversary of the invention of the basic dephosphorisation of steel has just been celebrated in Paris under the auspices of the Society of Civil Engineers of France, it seems opportune to call the attention of the agricultural world to one of the most striking facts of the industrial development at the end of the nineteenth century and its entirely unforeseen repercussion on farming.

Prof GEORGES RAY.

## ORIGINAL ARTICLES

### Plant Requirements in Soil Nutrients and the Course of Absorption.

The requirements of different crops in nutritive substances vary both quantitatively and qualitatively. The total amount absorbed by a plant in the course of its growth is determined by the specific qualities of the plant, such as its special requirements, capacity for absorbing and assimilating nutrients and many other internal and external factors.

The requirements of a plant in nutritive materials vary also with the season, developing parallel with the growth cycle of the plant. This phenomenon is of considerable practical interest. If the soil does not supply all that the plant needs for regular growth, the deficiency must be supplied in the form of fertilisers, and it is of fundamental importance that this supplementary food should be applied precisely at the moment when the need makes itself felt.

Thus in order to be able to give a fertiliser formula it is necessary to know not only the plant's requirements in food materials, but also the course of absorption during the development of the crop. Uniform bases must be found for the comparison over a series of years of the course and rate of absorption of nutrients by the various crop plants.

It is only of recent years, as will be seen, that these considerations which are so indispensable for obtaining accurate and conclusive results have been taken into consideration. The studies of G. LIEBSCHER, published in 1887, form the foundation of all research of this nature. LIEBSCHER must have the credit for having demonstrated that a need for nutritive elements corresponds to the active growth of plants in spring, increasing parallel with growth and must be compensated by a supply of readily available fertilisers.

The work of LIEBSCHER has inspired, particularly in Germany, a quantity of research along similar lines. At the present day there are in Germany two centres for the continuation of the work: one at Halle (Prof. ROEMER) which is concerned more particularly with grain crops, and the other at Bonn, where, under the direction of Prof. REMY, an old pupil of LIEBSCHER, the studies have been considerably developed and extended to root crops, legumes and vegetables.

The work at Bonn has led to the following conclusions:—

(1) absorption of nutritive substances being an essential factor of growth always precedes the formation of organic substances;

(2) the interval though varying with the species is not immutable for a given species but depends on the nutritive substances available and on other growth-determining factors. In other words, the requirements of plants in nutritive substances and the rhythm of absorption are not absolutely fixed for a given species or variety, but are adaptable to conditions. The manner in which this adaptation is shown is however a specific or varietal character.

REMY has grouped plants in the following manner:—

(1) Autumn and spring cereals. The characteristics of these will be given below.

(2) Staple root crops. In these plants (main crop potatoes, sugar beet, mangolds, swedes, cabbages) the absorption of nutritive substances begins slowly and steadily increases till it reaches a high content, then gradually slackens till zero is reached when growth ceases. Maximum absorption corresponds to the height of summer. The absorption period varies from 150 to about 180 days. Farmyard manure and green manures liberate their nutritive elements in the order corresponding to the needs of these crops.

(3) Pulse crops (peas, beans, etc.). These plants are characterised by a relatively high rate of absorption during the latter half of their growing period. Their absorption coincides with the period of maximum soil activity. The absorption period lasts from 100 to 150 days.

(4) Grasses and perennial clovers. In their first year of growth these plants require much nutritive material to develop their root system and accumulate reserves. The following year part of this material is utilised in forming the aerial parts. Then, in the autumn, they again accumulate reserves in the roots. After the development of the root system is completed their requirements in nutrients are more or less evenly distributed over the whole growing period. Successive cropping checks development and prevents ripening.

(5) Perennials such as hops, osiers, asparagus and rhubarb, which behave similarly to grasses.

(6) Salad plants, spinach, certain kinds of cabbage and forage plants sown at varying seasons. Absorption of nutrients varies according to the date of sowing.

E. DEICHMANN has illustrated graphically the course of absorption of nutritive substances as determined by REMY. By way of an example the figures relating to rye and sugar beet are reproduced here (See next page).

The experiments of Halle University for determining plant requirements and absorption of nutrients are distinguished from others in having been carried out in the field over three consecutive years on land divided for many years into two plots, one of which has been well manured and the other has received no manure. H. WAGNER requires that in experiments of this type the samples for analysis must be taken at short intervals in order to be able to follow closely all the processes of plant nutrition. In the experiments at Halle the samples have been taken at intervals of about ten days. The samples have been analysed chemically for calculation of the nutritive substances absorbed per kilo per hectare. The experiments were carried out from 1921-1923 by W. SCHLESIER on summer crops and in 1925-26, 1926-27 and 1928-29 by G. QUITZAU on winter cereals. The highly instructive results of this work have recently been published in two articles which, however, differ so considerably in substance and form that it is difficult to compare and combine the results.

There are however some similar results. The most outstanding point is the dominating influence of weather conditions on the absorption of nutrients. This influence is so marked that it generally makes impossible the comparison of two consecutive years.

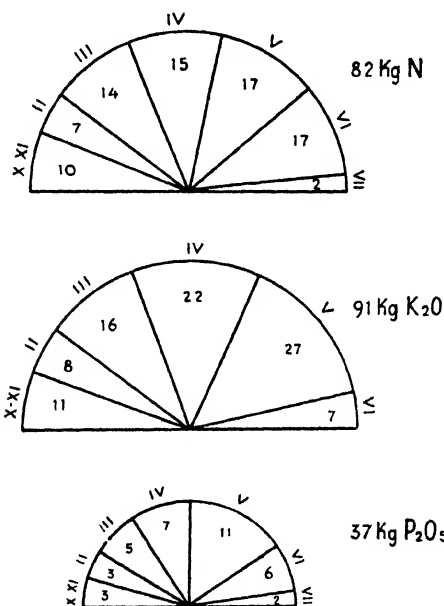
In both series of experiments it has been found that absorption of  $P_2O_5$  is effected comparatively regularly during the growing period and that it continues

till maturation is completed. Nitrogen absorption, on the other hand, is liable to wide fluctuations. It is dependent mainly on the water content of the soil.  $K_2O$  and  $CaO$  are absorbed more rapidly than are  $N$  and  $P_2O_5$ . The maximum absorption of  $K_2O$  and  $CaO$  is reached well before maturation and diminishes then until harvest. SCHLESIER tends to attribute the reduction in  $K_2O$  and  $CaO$  content that he has observed regularly in all crops to losses due to rain. QUITZAU,

*Nutritive matter absorbed in kg par ha.*

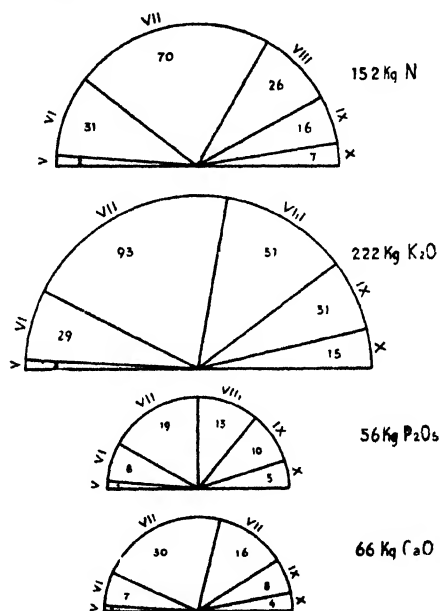
**AUTUMN RYE**

Sown end of September, crop of grain 30 quintals; duration of vegetation, about 7 months, not including time of winter rest.



**SUGAR BEET**

Sown end of April; crop of beets 350 quintals, tops 250 quintals; duration of growth 170 to 180 days.



N. B. — The arabic figures indicate the quantities absorbed in kg. during the different months, which are indicated by the Roman figures.

who also observed this phenomenon, states it without suggesting any explanation. The question remains to be studied further as a whole. The liberation of  $Ca$  and  $K$  ions by plant roots has been studied from a theoretical standpoint by H. LUNDEGÅRD (Stockholm) in his recent work on the process of absorption of nutritive substances by plants.

SCHLESIER, in agreement on this point with H. WAGNER, found during three consecutive years a highly unstable relationship between the different nutritive elements in the course of plant growth. The ratio  $P_2O_5 : N$  is however constant. It is about 1 : 2.4 for wheat, 1 : 2 for barley, 1 : 1.9 for oats and 1 : 2.6 for potatoes.

According to SCHLESIER, during three consecutive years the "Strubes roter Schlanstedter" wheat took greater quantities of nutrients from the soil than did the "Janetzki's früher S. W." variety. Beet utilised the nutritive substances, specially nitrogen, better than potatoes. Characteristic differences in absorption were found also in two different varieties of oats. On the other hand, QUITZAU did not find genuinely characteristic and constant differences in absorption power between the various varieties of wheat, barley and winter rye that he studied. The differences between the varieties were greatly surpassed and disguised by the influence of weather factors. QUITZAU finds that in general for winter cereals absorption of nutritive substances considerably precedes formation of organic material; the same result was reached for spring cereals by H. WAGNER and SCHLESIER. The highly instructive graphs show that there is no regular correspondence between absorption and formation of organic matter. Absorption is particularly intense in spring when growth is renewed in the young plants, and by the time of flowering the essential part of absorption is at an end. The reverse process follows: there is active formation of substance, converted by the plants from the elements absorbed earlier.

The characteristics established by observing and comparing the process of absorption in different cereals in one year are not verified in another year. Neither can it be said that these characteristics are inherent in the given species. These experiments which extended over only three years are not sufficient to prove whether or not such characteristics really exist. Plants are able up to a certain point to adapt themselves to unfavourable conditions such as bad weather, manures or other treatments unsuited to their needs.

The requirements in nutritive materials of the various cereals oscillated considerably in the three years of the experiments, but on an average they were more or less equal for all species. Rye, however, showed a certain preference for  $K_2O$  and  $CaO$ .

During three consecutive years barley has proved to be the cereal with least power of absorption. Wheat has been able to draw more and rye more again from non-fertilised soil. Recently H. LIESEGANG has again shown that barley has greater requirements of  $K_2O$  and  $P_2O_5$  than other cereals. It is less well able to utilise the nutritive elements present in the soil and applied as fertiliser, and it responds less well than oats in giving increased yield of grain with greater absorption.

The quantity of nutritive elements absorbed by the different species of autumn cereals before spring growth begins is shown in the following table, after QUITZAU.

*Maximum of nutritive material absorbed until beginning of spring, in kg. per ha.*

	N	$P_2O_5$	$K_2O$	CaO
Barley . . . . .	50.68	12.45	43.90	10.74
Rye . . . . .	25.02	9.52	35.34	5.48
Wheat . . . . .	7.56	2.31	7.60	1.48

Thus two types of cereals can be distinguished: wheat, which develops after the winter, and barley and rye which are developing already in autumn.

The two latter are characterised by a growing period of approximately equal pre-winter absorption, by an interruption in growth during the height of the winter cold and by a renewal of absorption as soon as growth begins again in early spring, the latter being profoundly influenced by weather conditions. Absorption is terminated with the flowering period or a little later. It depends greatly on the weather. Winter wheat differs in having less pre-winter development, by a post-winter development beginning later and continuing longer.

It results in practice that barley and rye are able to profit from an autumn dressing of fertiliser, whereas wheat before winter will in general find sufficient reserves in the soil for its lesser requirements, specially when it is taken into account that it is generally grown on richer land.

These requirements have thrown much light on the important question of when to apply fertiliser. They have shown the course of absorption through the seasons and determined within more or less narrow limits the time of the maximum requirement of nutritive substances, relating it to a more or less fixed date for plants in which development follows a relatively uniform course, or to a definite stage in development for plants in which development, without relation to the time of sowing, is determined by properties inherent in the species and by environmental factors, the latter to be observed and recognised by the farmer in deciding the exact moment at which to apply the fertiliser.

It is a fact, however, that plants have not absolutely fixed requirements. They are able, as has been said above, to adapt themselves to a certain extent. In particular, they are able to absorb fertilisers that are applied late ; but in this case the question arises of how far the nutritive materials absorbed are then able to give their full benefit. FRANKEN states in answer to this question, that the date of absorption of N and  $K_2O$  may vary considerably without affecting their nutritive effects, but that the effect of  $P_2O_5$  is bound to a relatively fixed and limited season. The effect of N, however, is diminished more than that of  $K_2O$  if it is absorbed too late.

KÜPPER distinguishes two types of plants according to their faculty for profiting from nitrogenous fertilisers applied too late:— (1) plants such as beet and potatoes which react to renewed stimulation to growth not by forming new shoots but by retaining alive the leaves already formed and forming others on the existing shoots ; (2) plants which form secondary shoots if conditions are fundamentally improved. This group includes grasses, legumes, rape, etc.

The reaction of the first group is more convenient from an economic standpoint as delay in applying fertiliser is in this case less serious. A dressing of N applied too late prolongs growth and if the application is greatly delayed it will not be fully absorbed and the effect will be less. The situation is much more serious in the second group in which new shoots are produced. The dark green colour which is produced as a result of a late dressing of N should not deceive the farmer, for there will be no corresponding increase in the crop to compensate for the cost of the fertiliser and its application, particularly if the protein content of the grain is not taken into account.

It is of interest to note that in practice it is preferable to apply the fertilisers too early rather than too late. This is true more particularly for  $K_2O$  and  $P_2O_5$ ,

which are not liable to be leached out by rain nor to produce too luxuriant vegetative growth.

The total results of the experiments of the two German Stations allow of the deduction, as made by REMY, if not of strict rules for each particular case, at least of general rules which may be summarised as follows :—

(1) Winter cereals are in general satisfied, as has been said above, with a light dressing of nitrogenous manure applied in autumn. Slow-acting nitrogenous fertilisers (ammonium sulphate, calcium cyanamide, urea) fulfil the post-winter requirements, as their effect extends over a comparatively long period, reaching its maximum towards the beginning of heading. If much fertiliser is to be applied, it is recommended to give it in several dressings. Potash and phosphorus must be applied before planting. In exceptional cases they may be applied as a mulch early in spring.

(2) Spring cereals, being characterised by a shorter period of absorption and by a more pronounced maximum, require quick-acting fertilisers applied before sowing. Nitrogenous fertilisers applied as a mulch are effective so long as sufficient rain falls to dissolve them.

(3) Pulse crops have an advantage over spring cereals in that their maximum requirement coincides with a season in which the development of the roots is already far advanced, so that they are better able to profit from slow-acting fertilisers.

(4) Late varieties of root crops absorb nutritive materials approximately in the order in which they are liberated in the decomposition of farmyard manure and green manures. It is for this reason partly that these manures are so well adapted to the requirements of these crops. It is well, however, to supply the maximum needs, which are rather high, by a dressing of chemical fertilisers applied in good time so as to ensure their availability when the need arises.

(5) Clovers and perennial grasses being obliged first to develop a root system must have at their disposal during the first year an adequate supply of nutritive materials. If the crops are kept over several years it is necessary to provide them in autumn with materials to restore the reserves used up in the spring. It is still more important not to hinder the accumulation of the reserves in the underground parts by cutting too late.

It has now been seen that the researches carried on over a number of years on an increasingly large number of crop plants have resulted in clearing up two points of fundamental importance regarding fertilisation, namely the requirements of plants in nutritive materials and the course of the absorption of these materials through the seasons and during the development of the plants. To obtain slightly more accurate formulae it is necessary to consider also other factors, such as the capacity of the plant for absorbing and profiting from the substances made available. But beyond these there are other factors which are not dependent on the physiological properties of the plants themselves. There are the factors related to the soil, to its physical state and more particularly its content in nutritive materials. For determining the composition of soil we have available accurate and quick methods. Finally there must also be



taken into account the rhythm according to which the soil liberates and makes available to plants the nutritive materials. This depends largely on the form in which the fertilisers have been supplied, on tillage and cultural treatments. It thus depends largely on the farmer. But it depends still more on the weather conditions, and for this reason there must always remain some unpredictable factors which cannot be eliminated by all the efforts of science.

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## Cotton Growing in the Italian Colonies in Tropical Africa.

### I. — CIRENAICA.

Cotton being of great importance in the national economy of Italy the possibility of cultivating it in Cirenaica is naturally being studied. As yet it is too early to estimate the value of the trials which have been undertaken.

The first attempts to introduce cotton were made at Fuchiat by Don Vito Zanon of the Mission of the Giuseppini Fathers in the first years of the occupation.

The seed used was of the arborescent cotton 'Caravonica Wood' and 'Boid's Prolific' which was supplied by Prof. Tropea. After several attempts a small reserve of plants was obtained, these being grown in ditches for the sake of protection from the wind and receiving more water during the rains. The work of Don Zanon was interrupted in 1918-19. In 1926 a magnificent growth of cotton was found at Fuchiat which, as it had certainly been abandoned by the Mission, must have been 14 to 15 years old. This cotton was growing without

irrigation. The plants were 2.5 m. apart and covered an area of 1600 square metres. Since 1926 their production has been studied and the experiment station for plant fibres at Milan has tested the lint. The length of staple is variable and the lint is white with some yellowish markings ; it is free from boll and leaf débris, is rather rough and woolly to the touch.

Parallel with these experiments in dry cultivation trials with irrigated cotton have been carried out at Derna. These were begun in 1926. Seed of the variety 'Abbondansia', *G. hirsutum*, was sown. In 1927 the trials were continued with seed collected from the previous year's crop. The cotton proved well adapted to the weather and agrological conditions of the region. It withstood wind and was not exacting as regards irrigation ; it grew luxuriantly and unlike other plants did not show symptoms of chlorosis after a certain time but kept a dark green colour throughout the whole cycle of growth. The yield reached and even exceeded 20 quintals of raw cotton to the hectare.

In 1929 some Egyptian cottons were tried. The best results were obtained with the variety 'Zaguara', which is excellent from all points of view and has fine long-stapled fibre. The Sakellaridis was not abundantly watered and grew slowly ; the heat of the sun turned it yellowish, reduced the strength of the fibre and made it readily susceptible to insect attack. The worst results were given by 'Billion' cotton, which showed the same defects as the last.

At the present time the 'Pima' cotton grown in Algeria is being tried at Bengasi together with other varieties cultivated and sent by the Agricultural Institute of Algiers and by the Experiment Station of Rabat.

It is realised that too much insistence must not be laid on these experiments with irrigated cotton because of the shortage of labour and of water for irrigation purposes. The available water should rather be left for the food crops or other crops more profitable than cotton.

Dry cultivation of cotton should, however, be thoroughly studied, for it has the advantages of requiring little labour and of keeping the ground occupied over a long period. This crop would be especially suitable in the arid land of the Bengasi plain.

## 2. - ERITREA.

Cotton is grown in the plain of Tessenei.

Development of the Tessenei plain was begun theoretically in 1906 and consisted mainly in the control of the river Gasc which flows from the plateau of Hamasien. The work actually began towards the end of 1923 and has since then been actively pursued.

Cotton is the most important crop in the region and gives the growers hope for surer returns later. It must be acknowledged, however, that up to the present the yields have not been good, largely owing to faulty cultural technique, lack of training of the growers and too superficial a knowledge of the environment.

### Varieties.

From the beginning of cotton growing preference has been given to the variety Sakellaridis. In fact comparative trials of this variety and several Upland

cottons have shown that none of the latter is earlier or much more productive than Sakellaridis. The slight difference in yield was compensated by the better quality of the lint in the Egyptian variety. The use of the American varieties would also entail increased labour costs for picking and ginning. A new American variety has recently been introduced from the Sudan which is a little earlier than the others and gives a good quality fibre. The use of this variety might well be developed ; in the 1931 season about 300 hectares were already planted with it.

### Cultural methods.

Cotton is grown as an irrigated crop. The seed must not be sown before the irrigation water is absorbed by the ground. On an average 4000 cubic metres of water are given per hectare. The overflow runs into special drainage channels.

As soon as the ground has reached the right state of dryness it is planted. The seed is sown in pockets with a large dibble, called a 'seluca', which is dug into the soil by the foot.

The spacing distances used are 1 m. between the rows and 0.8 in the rows for Sakellaridis, and 1 m  $\times$  0.5 for the new American variety. In each pocket 10 to 15 seeds are placed and covered with a thin layer of soil. In order to facilitate germination the seeds are usually steeped for 24 hours before sowing in this case germination takes about four days

When the state of the ground permits it is harrowed after being planted, this harrowing is important because it keeps the soil in good condition as regards capillarity and so ensures a satisfactory distribution of moisture. Unfortunately the natives are not readily induced to undertake it and when they do it is very imperfectly carried out

Thinning is effected when the seedlings are 15 to 20 cm in height, keeping 4 or 5 of the best plants in each pocket.

Topping is carried out 80 or 90 days after planting. This also the natives are not willing to practise in spite of its obvious utility

Picking is carried out by women and children and begins at the end of the fourth month after planting. The cotton is collected in sheds built by each grower at the time of the harvest and is then removed to the ginnery, where it is graded, weighed, ginned and made into 150 kg bales. A quintal of Sakellaridis in the boll gives 32 kg of fibre, the seed yields 13 % of oil.

Up to the present the Tessenei cotton is free from serious insects pests. In past years insignificant damage by *Sphenoptera*, *Nisotra* and *Earias* has been observed. The absence of the pink bollworm is definitely established.

The acreage under cotton since 1926 has been as follows : —

1926. . . . .	700 hectares
1927. . . . .	1,500    "
1928. . . . .	1,000    "
1929. . . . .	1,200    "
1930. . . . .	1,600    "
1931. . . . .	2,400    "

### 3. — ITALIAN SOMALILAND.

Cotton is grown in the valley of the Uebi-Scebeli (southern part of Italian Somaliland) and specially in the Genale region. The first experiments in modern cultivation took place in 1926-27.

The soil of the Uebi-Scebeli valley is alluvial, deep calcareous clay, heavy, and little or not at all permeable, and with only a slight slope. It is poor in humus, has a somewhat high content in alkaline salts and a  $pH$  of 7.5 to 8.1.

Cotton may be successfully grown and give good yields in Somaliland if the cultural practice corresponds to the requirements of the climate and soil. The failures that have recently occurred in crops have been due to a combination of factors of physiological and parasitic nature, aggravated by lack of a cultural technique adapted to the conditions.

#### Present cultural practice and changes suggested.

*Rotation.* — Cotton is grown in a regular crop rotation, usually following maize or sesamum. The ground is rarely left fallow.

This rotation is not suitable because there is no leguminous forage crop to enrich the calcareous clay soils in humus and make them less heavy.

Cotton is also generally grown on land recently cleared of forest, the soil of which is practically virgin, having borne only one or two crops of maize.

It would be well to leave the ground fallow for at least one year before planting cotton.

*Tillage.* — Land destined to grow cotton is generally tractor-ploughed to a depth reaching sometimes 45 centimetres.

It would seem that a depth of 30 cm would suffice for land left fallow for one year. A perfect levelling of the soil should also be obtained in order to have a regular distribution of the irrigation water.

*Sowing.* — Seed is sown in April. It is sown in pockets by hand by the natives, and is therefore very uneven.

The sowing of cotton in April should be based on the spring rains. If the rain begins early sowing should wait until it ceases, thus allowing the water to reach the subsoil; the ideal moment would be when the ground has soaked up 150 mm. of water. It is a mistake to sow as soon as 40 or 50 mm. of rain have fallen.

*Varieties.* — A single variety is grown, the Egyptian long-staple Sakellaridis, which is imported or selected locally (the latter selection is named *Scassel* after the late Prof. Scassellati).

Sakellaridis cotton is on the strength of the quality of its lint and its quick growth the best to grow in Somaliland until a better has been found. If the climatic conditions, and more particularly the period between the spring and autumn rains, are studied, the importance will be realised of growing a variety with the shortest possible growth cycle. Upland cotton comes to maturity in only 140 days, but is short-stapled and fetches a lower price than Sakellaridis; the hardier varieties which are better suited to the conditions are slow growing and ripen only in October, when the rains have already begun.

It is necessary to try to get the greatest possible yield at the first picking in September. The first picking of Sakellaridis represents 60-65 % of the total crop. The second picking takes place at the end of October. It is well after this to burn the plants, for it is not worth while to attempt a further picking as the amount obtained would not repay the expenses of picking.

*Irrigation.* — Until recently the usual Egyptian method was followed and the plants were supplied during the growing period with 8000 to 9000 cubic metres of water per hectare. Now this quantity has been reduced.

One of the main causes of the present failures of cotton in Somaliland is this over-abundant irrigation during the growing season, regardless of how the soil and climate differ from those of other tropical countries.

The excessive moisture of the clay soil increases its heavyness and hinders the regular progress of growth. The plants are thus liable to develop root rot. Excessive irrigation also impoverishes the soil in oxygen. Further, as a result of the evaporation of all this irrigation water the alkaline salts tend to rise to the surface.

It should therefore be endeavoured to use systems of cultivation which allow the least possible loss of water after sowing and avoid too rapid evaporation.

The operations recommended may be summarised as follows :

(a) Pulverise the arable layer in order to avoid evaporation, the plants will then be able to find sufficient water for their needs until July.

(b) Irrigate lightly then, and afterwards hoe regularly the whole of the ground.

(c) Maintain the surface soil in a friable condition by all means possible.

(d) If necessary irrigate again in August to avoid being obliged to do so during the ripening of the bolls.

(e) Immediately after picking (September) a third very moderate irrigation may be applied in order to promote development of the bolls but not sufficient to encourage fresh growth.

*Soil improvement.* — Application of chemical fertilisers has been widely practised, even on soil that could be regarded as virgin; usually 3 quintals of superphosphate and 1 quintal of ammonium nitrate were added during the preparation of the ground. In certain cases the ammonium nitrate was applied as a top dressing in May.

The superphosphate adds to the soil an element which may favour the development and ripening of the bolls.

Experiments should however be carried out to determine whether or not this fertilising is economically profitable.

Ammonium nitrate favours the vegetative growth of the plant at the expense of boll formation, being detrimental as regards quantity, quality and earliness. It would thus be well to stop the practice of nitrogenous fertilising.

Moreover, the general aspect, the flora, and chemical analysis, all show that the soil is very poor in humus. It can be enriched in organic matter by using green manures and farmyard manure. The use of organic waste and leguminous crops for ploughing under is difficult because it may encourage termites and the tse-tse fly.

Fertilisation then must not be based solely on chemical analysis of the soil, but also on biological analysis. Soil fatigue may result rather from the plants being in unfavourable conditions than from deficiency of essential elements.

The unfavourable conditions may be due to the technique of cultivation practised, to continuous cropping and to continual irrigation of a heavy and impermeable soil.

Thus it is necessary to improve the physico-chemical qualities of the soil. This may be achieved by discontinuous cropping, by a rational method of irrigation and by suitable cultivation practices

*Hoeing.* — The first hoeing is combined with the first thinning, then further hoeings follow, in certain estates *before* irrigation. In some cases only the bottom of the furrow is hoed and no importance is attached to making the surface soil friable.

After what has been said above, however, it is clear that hoeing is of great importance, specially to prevent or check the formation of a crust on the surface. For this reason the ground should be hoed after irrigation, as soon as the soil is in fit condition, and care taken to keep the surface in a friable state. Careful hoeing will allow growth until July without irrigation

*Thinning* The first thinning of the seedlings is effected a fortnight after sowing; a month after, a final thinning leaves two plants per pocket. This method appears to be satisfactory and should be followed.

*Earthing up.* - This operation has not so far been accorded the importance it merits. In view of the continuous and comparatively strong south-westerly winds in July and August, which beat down the plants if they are not sheltered by wind-breaks, it would be a wise plan to earth them up thoroughly

*Topping* Topping is carried out in July in most plantations. If this practice were made general it would be an advantage, specially if carried out in time, remembering that too early is better than too late. The best time for topping is when the plants reach a height of about 1.2 m, usually in the first fortnight in July.

*Wind-Breaks.* - For permanent wind-breaks kapok, cassia and casuarina trees are used. The kapok and cassia trees are planted along the main, secondary and tertiary irrigation channels, cassias are also planted along quaternary channels and roads. Casuarinas are planted along both sides of the roads.

Temporary wind screens are formed by sunflowers sown along the quaternary channels and on the outer sides of the cultivated plots.

The wind is so serious a problem that it would be well to organise and make general the use of permanent and temporary wind-breaks.

*Parasites.* The most dangerous pest is the pink bollworm (*Platyedra gossypiella*). It has spread in the plantations by way of the wild plants, which are serious centres of infection. These plants should be destroyed, especially *Hibiscus dongolensis*, *H. panduraciformis*, *Abutilon asiaticum*, *Thespesia* *Denis*. The next in order of destructiveness is *Earias insulana* which feeds on the same wild plants as the preceding.

The other insect pests are: *Syagrus rugiceps*, *Heliothis obsoleta* Hubn., *Diparopsis castanea* Hamps., *Pyroderces simplex* Wlsm., *Dysdercus cardinalis*, *Oxyca-*

*renus hyalinipennis* Costa, *Empoasca facialis*, *Aphis gossypii* Grover and *Heliothrips indicus* Bagn.

For the control of certain of these pests trap plants may be grown ; Hibiscus against *Platyedra*, *Earias*, *Dysdercus* and *Oxycarenus* ; maize against *Heliothis* and also *Earias*. The trap plants must be sown more than once in a succession of plantings.

The spread of the yellow Braconid, the most destructive enemy of the pink bollworm, should also be encouraged.

The acreage under cotton in recent years has been :—

1927-28 . . . . .	5,500 hectares
1928-29 . . . . .	8,250    »
1929-30 . . . . .	10,850   »
1930-31 . . . . .	7,500    »

J. LEGROS.

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### **The Organisation of Training and Research in Animal Husbandry in various Countries.**

The International Institute of Agriculture has recently published an International Directory of Animal Husbandry Institutions. As explained in the Introduction to the Directory, the first edition cannot be regarded as complete. It may therefore seem premature to base a study of the organisation of animal husbandry training and research throughout the world on the information contained in this volume. The reason for so doing is, however, that despite certain gaps in details, which will be supplied later as our documentation becomes more complete, it is thought that a general survey of the situation may be of use.

All the data and information which have been received since the directory was sent to the press will be utilised in the present article in order to determine : (1) whether training and research in the different countries are co-ordinated or separate ; (2) whether training and research are in the charge of Universities or

of other schools where they are independent ; (3) whether the subject is dealt with in special institutes or in institutes which also deal with other agricultural or non-agricultural branches ; (4) if institutes exist, in the different countries, which specialise in instruction or research in the established branches of animal husbandry.

We shall deal briefly with these questions country by country, in alphabetical order of their French names, omitting those countries which have not yet any real organisation of zootechnical training or research.

## EUROPE.

### GERMANY.

In Germany, most of the institutes dealing with animal husbandry combine instruction with research. These institutes are under the administration of the Universities, Higher Schools of Agricultural, Higher Schools of Veterinary Science or Higher Technical Schools. There, is however, a fairly large number of institutes dealing separately with animal husbandry research. Animal husbandry is, in general, dealt with by special institutes, but there also exist establishments in which the subject forms only one branch of the activities. A large number of institutes are specialised in a single branch of animal husbandry such as dairy production, livestock genetics, feeding of livestock, pig-rearing, poultry rearing, bee-keeping, fur-farming or pisciculture.

### AUSTRIA

Austria has a small number of specialised institutes. Some are attached to the Higher Agricultural School of Vienna and the others are independent. Instruction and research are nearly all combined in the same institute. There are, however, also institutes organised specially for research and the Higher Veterinary School of Vienna possesses only a chair of animal husbandry. Other special institutes deal only with dairy production, animal physiology, livestock feeding, hydrobiology and pisciculture.

### BELGIUM

Instruction and research are, in Belgium, generally combined in the same institute attached to Universities, to State Agricultural Schools or to National Veterinary Schools. For animal husbandry there are only two separate institutes, one of which deals with both instruction and research whereas the other limits itself to research (Lovenjoul). There are no institutes which specialise in any single branch of animal husbandry.

### BULGARIA.

There are to be noted in Bulgaria institutes which deal with instruction and research while others are limited to research. Most of these institutes are attached to the University of Sofia either in the faculty of agriculture or in that of veterinary science. Animal husbandry is always dealt with specially and there also exist institutes for certain branches such as poultry rearing and sericulture.



## DENMARK.

All instruction and research is centred at the Royal Veterinary and Agricultural College. Two departments of the Agricultural Research Laboratory attached to this college are devoted to animal husbandry subjects, one to animal physiology and the other to animal husbandry proper. Research is carried on under the direction of the departments of this laboratory on private farms.

## SPAIN.

In Spain the whole of the service of instruction and research is at present being reorganised. For this reason, the data available for this country are incomplete. According to information received training is nearly always separated from research. Instruction in animal husbandry is mostly imparted in the Higher Schools of Agriculture, the School for Agricultural Specialists and the Veterinary School, which are all independent of the Universities. A Higher School of Animal Husbandry will shortly be set up at Barcelona. There exists in Spain a fairly large number of research institutes, part of which specialise in animal husbandry and in addition are occupied with other branches of agriculture. There are also research institutes which deal with a single branch of animal husbandry, such as animal biology, sericulture or poultry-rearing. For poultry rearing Spain possesses a special school.

## ESTONIA.

Instruction and research in animal husbandry are almost entirely centred at the University of Tartu. The subject is dealt with in a special laboratory. The centre of zootechnical research is attached to the University. There are at the University, in addition, special laboratories for some branches of animal husbandry such as the breeding of horses and small stock; a research station for pig rearing is independent of the University.

## IRISH FREE STATE.

In the Irish Free State, instruction and research are effected in close connection with the schools. The Ministry of Agriculture also assists the research in animal husbandry carried out principally by the Munster Institute which specialises in dairy production and poultry rearing.

The colleges and other agricultural and veterinary schools which also deal with zootechnical research are partly dependent on the University and partly on the Ministry of Agriculture.

## FINLAND.

The University of Helsinki has an institute of animal husbandry for instruction and research. The State Research Station also carries out research independently of the University.

One of the seven sections of the Institute is devoted to the study of animal husbandry and another to the study of animal genetics.

Lastly, there exist institutes specialised in the rearing of pigs and poultry.

## FRANCE.

In France instruction and research are in general the work of the schools : the National Agricultural Institute, National Agricultural Schools, Agricultural Institutes of the Universities, Veterinary Schools and Colonial Schools. Most of these schools have special zootechnical institutes or laboratories. There is, in addition, a centre for research in animal husbandry and numerous institutes (research centres), specialised in a single branch of animal husbandry, such as sheep rearing, feeding of livestock, the study of wool, poultry rearing, bee-keeping, sericulture, pisciculture. A certain number of these institutes is directed or subsidised by the National Institute of Agricultural Research.

## GREAT BRITAIN AND NORTHERN IRELAND.

The organisation of instruction and research in England, Scotland and Northern Ireland must be considered.

In Great Britain there are two Imperial Institutes dealing with animal husbandry which centralise research work for the whole of the British Empire. One of these institutes deals with the feeding of domestic animals and the other with animal genetics. The organisations in question are bureaux which give no instruction and carry out no actual research work but rather centralise the results obtained by the research institutes of the Empire.

In England, instruction, research and experiment in animal husbandry are closely connected. Most of the colleges dealing with animal husbandry are attached to the Universities and possess the necessary means for carrying out scientific work. There are also specialised research institutes. The latter are highly specialised in advanced research work, whereas in the institutes both giving instruction and carrying out research work, animal husbandry forms merely a part of the general activity in regard to agriculture. There are, further, in England institutes specialising in research or instruction in a single branch of animal husbandry, such as the feeding of livestock, dairy production, poultry rearing, the rearing of small stock and pig rearing.

In Scotland the organisation of instruction and research in animal husbandry does not differ essentially from that found in England. Besides the Empire bureaux already mentioned there are Higher Agricultural and Veterinary Colleges which are attached to the Universities and give instruction and also carry out research work. Some institutes limit themselves to a single branch of animal husbandry (animal nutrition, animal genetics, dairy production).

In Northern Ireland the Department of Agriculture collaborates closely with the University of Belfast. This collaboration is devoted to three research institutes of which two are rather specialised in animal nutrition. Advanced instruction is given at the Agricultural College of the University of Belfast.

## HUNGARY.

In Hungary a certain number of institutes give instruction and do research work, but besides these there is also a large number of institutes occupied exclusively with research. There are special institutes for animal husbandry and

specialisation in this work is at a very advanced stage. There exists a fairly large number of institutes each specialised in a special branch of animal husbandry such as animal physiology, animal nutrition, dairy production, poultry rearing, pisciculture, the study of wool and bee-keeping.

#### ITALY.

In Italy instruction and research are mostly separate, although there also exist various mixed institutes.

Instruction is, in general, given in the Higher Agricultural Institutes (Bologna, Florence, Milan, Perugia, Pisa, Portici) and in the veterinary Institutes, which are independent of the Universities but have University status.

Research work, which is also independent of the Universities is, for the larger part, entrusted to special Institutes of animal husbandry. There are also institutes which specialise in single branches such as animal genetics, sheep rearing, poultry rearing and sericulture.

#### LATVIA.

The work of instruction and research is distributed amongst various institutes which, however, are all under University administration. There is one research institute specialised in animal husbandry.

#### LITHUANIA.

Instruction and research are separate. Instruction is in the charge of the Agricultural Academy and of the Faculty of Veterinary Science of the University, whereas research is carried out at the Agricultural Research Institute.

#### NORWAY.

The work of research and instruction is combined at the Higher Agricultural School, which is independent of the University. Animal husbandry in this school is in the charge of a special institute having sections dealing with animal nutrition and pig rearing, the latter being rather specialised as regards research.

#### NETHERLANDS, THE.

Instruction and research are partly combined and partly separate. The most important centres of instruction and research are attached to the Higher Agricultural School of Wageningen and to the University of Utrecht. There are in addition institutes each dealing with a single branch of animal husbandry such as poultry rearing, pisciculture and bee-keeping.

#### POLAND.

Instruction and research are generally combined and under the Universities, Higher Agricultural Schools, Veterinary Schools and Higher Technical Schools. There are also some institutes, doing only research work, which are independent of the schools. The most important research centre is the National Institute of Agricultural Research and its branches. In addition there are also the research stations subsidised by the Societies of Animal Husbandry and the Chambers of Agriculture. There also exists in Poland a certain number of centres specialised in anatomy, physiology, morphology, animal nutrition and pisciculture.

## PORTUGAL.

Instruction and research in animal husbandry are partly combined and partly separate but always independent of the Universities. Instruction is specially entrusted to the Higher Agricultural and Veterinary Schools. Research work is in general carried out at the agricultural research centres, but there also exists a certain number of specialised institutes of animal husbandry.

## RUMANIA.

In Rumania, the work of research and instruction in animal husbandry is partly effected at the Agricultural Academies or at the Universities. There are also institutes which are devoted exclusively to research work and are independent of the schools. Animal husbandry is nearly always dealt with by specialised institutes, the most important of which is the National Institute of Animal Husbandry. There also exist institutes specialised in single branches of animal husbandry such as cattle rearing, sheep rearing, sericulture, pisciculture and poultry rearing.

## SWEDEN

Instruction is generally organised separately from research work, although the schools are sometimes furnished with the necessary means for research. The Higher Schools which teach animal husbandry are all independent of the Universities. Pure research work is effected especially at the Central Institute of Agricultural Research (Experimentalfältet), which has a special department for animal husbandry. There are, moreover, special institutes for animal genetics, dairy production, pig rearing, poultry rearing and pisciculture.

## SWITZERLAND.

In Switzerland instruction and research in animal husbandry are closely connected. There exists only one institute which does solely research work and is independent of the schools. The other instructional and research institutes are attached partly to the Canton Universities and partly to the Federal Polytechnical School of Zürich. There are special institutes for animal husbandry and also specialised institutes for a single branch of this science (animal nutrition). Animal husbandry also forms an important part of the curriculum of most of the Canton Agricultural Schools, some of which possess specialised research stations.

## CZECHOSLOVAKIA.

Besides the institutes occupied with instruction and research there exist in Czechoslovakia several institutes specialised in research work. Most of these institutes are attached to the Higher Technical and Agricultural Schools. A considerable number of specialised institutes deal with animal husbandry. Besides the large Animal Husbandry Research Institute at Brno, there are institutes dealing with different branches of animal husbandry (biology of domestic animals and animal biotechnology), which are attached to the State Institute of Agricultural Research. Several other centres deal with dairy production, animal nutrition, bee-keeping and pisciculture.

## U. S. S. R.

Agricultural instruction and research have, in recent years, been completely reorganised, but this reorganisation cannot yet be considered complete. It is extremely difficult to compile even approximate data on this subject in order to form some idea of the new organisation. In the new organisation, instruction and research in the field of animal husbandry are nearly completely separated. The research institutes among which the central one is the " Lenin " Academy of Agricultural Science, are completely independent of the schools and are distributed for the most part in the State lands throughout the whole of the territory of the U. S. S. R. The schools are independent of the Universities.

It is interesting to note that the present plan of organisation anticipates intense specialisation. The institutes dealing with agriculture in general are not numerous, whereas there are many centres of research in animal husbandry and instruction, sometimes specialising in single branches of the science. The special subjects dealt with by the separate institutes are, besides the science-auxiliary to animal husbandry: dairy production, the rearing of meat animals, pigs, sheep, camels, poultry, rabbits and fur animals, as well as sericulture and bee-keeping. There may be distinguished the research institutes proper and their regional stations.

For instruction specialisation is in general less advanced

## YUGOSLAVIA

Instruction and research are partly combined and attached to the Universities but there also exists, besides the Universities, an organisation for agricultural research dealing with animal husbandry and under the direction of the Ministry of Agriculture. There is a special institute of animal husbandry at the University of Zagreb

## A M E R I C A .

## CANADA.

In Canada it is necessary to distinguish between the organisation of instruction and research under the Universities and the organisation of research and experiment under the Department of Agriculture. All of the institutes deal with all agricultural problems, including those of animal husbandry; they are well furnished with equipment for research and experiment. The organisation of experimental work under the Ministry includes a Central Agricultural Research Station and numerous stations and sub-stations. One of these stations is a farm for the rearing of fur animals and another is a range station.

## UNITED STATES.

Instruction and research in animal husbandry in the United States form a special organisation. All of the large State Agricultural Schools possess experimental farms or stations which have, however, a certain measure of independence. There is also an experimental organisation which is under the direction of the U. S. Department of Agriculture and is independent of the schools. The

schools themselves belong partly to the Universities partly to the State Colleges and partly to the Polytechnical Schools. Some are entirely independent (Colleges of Agriculture).

There is to be found, in the United States, a typical specialisation as regards zootechnical science. Many of the Schools of Agriculture possess, in fact, departments of animal husbandry, dairy husbandry and poultry husbandry. The characteristic feature of this specialisation is that the rearing of dairy stock and poultry does not generally belong to the animal husbandry department but to dairy husbandry and poultry husbandry respectively. These departments have such importance and independence in the schools that they may be considered as special institutes. Some schools have two of these departments or even all three combined in a single department which deals with anything concerning animal husbandry.

All these institutes make a clear distinction between instruction, experiment and extension. For the first of these activities they are attached to the schools ; for the second they constitute a State Experimental Station and for the third, they are grouped as Extension Service. These services function more or less in collaboration or independently.

Besides the State Schools there exists a fairly considerable number of less important Agricultural Schools which also deal with animal husbandry.

The U. S. Department of Agriculture directs a research service comprising the Bureau of Animal Production, the Bureau of Dairy Production, the U. S. Animal Husbandry Experiment Station and numerous other experimental stations distributed throughout the country.

## ASIA

### INDIA.

There is in India an Imperial Institute of Agricultural Research which must be considered separately as it does not form part of the administration of India itself but belongs to the whole of the Empire. Attached to this Institute, there is the Imperial Institute of Animal Husbandry and Dairying, which carries out research and gives instruction, the Imperial Dairy Research Station and two Imperial Breeding Farms.

Among the Hindu Institutes proper, the Agricultural Colleges and Research Institutes deal with instruction and research and form centres of scientific agricultural activity. Besides these colleges there are also independent experimental stations. These are farms and stations of an agricultural or zootechnical character or stations specialised in one or other of the branches of animal husbandry (dairy production, cattle rearing, buffalo rearing, sheep rearing, poultry rearing, sericulture).

### JAPAN.

Advanced instruction in animal husbandry in Japan is almost entirely in the hands of the Universities. Although the schools possess the means necessary for research, the actual experimental work is done independently of them. An-

imal husbandry is partly in the charge of general agricultural institutes, partly of specialised institutes and partly of stations dealing with only a single branch of animal husbandry.

#### PHILIPPINES.

There is in the Philippines, an Agricultural College possessing an Experimental Station and giving instruction as well as doing experimental work. It is under the direction of the University. This organisation makes a clear distinction between animal husbandry and the other branches of agriculture. Animal husbandry has its own institutes whereas the other institutes are specialised. The State experimental work in animal husbandry is directed by the Bureau of Animal Industry of the Department of Agriculture which controls animal husbandry farms and breeding stations.

### A F R I C A .

#### ALGERIA.

In Algeria, instruction and research in animal husbandry are combined. There is an institute for advanced agricultural instruction (Institut Agricole d'Algérie) having, attached to it, a farm and land for experiment, and other agriculture schools also having their experimental areas.

#### TUNIS.

Tunis has a large school (École coloniale d'agriculture de Tunis), giving instruction and carrying out research work in animal husbandry, and an institute devoted to research only (Institut Arloing). There also exists an experimental breeding farm studying the direct application in colonisation of the results of experiments in animal husbandry.

#### UNION OF SOUTH AFRICA.

For the most part research and instruction in South Africa are combined in the schools. Amongst these, a distinction must be made between the Agricultural Colleges of the Universities and the Agricultural Schools of the Ministry of Agriculture. All of these schools possess experimental farms and stations. In all of these institutes, which are of a general agricultural character, animal husbandry is a subject of very great importance.

There are also some institutes occupied exclusively with agricultural experimental work.

### O C E A N I A .

#### AUSTRALIA.

In Australia, as in most of the British Empire, there exists a research service connected with the schools and a service which is independent of the schools. The schools, in their turn are, in general, under the direction of the Universities. Animal husbandry forms a part of the activity of agricultural institutes

of a general character but there are also some institutes which deal specially with animal husbandry or with one or other of its branches (animal nutrition, research on livestock products, poultry rearing and bee-keeping).

#### NEW ZEALAND.

Experiment and instruction in animal husbandry are in this country generally combined in the Agricultural Colleges of the Universities. Besides these schools, the Department of Agriculture possesses research laboratories also doing research work in animal husbandry. Special institutes exist solely for dairy production and pasture problems.

S. TAUSSIG.

### MISCELLANEOUS INFORMATION

#### Temperate Regions.

INFLUENCE OF THE FACTOR "VARIETY" ON THE MINERAL EQUILIBRIUM OF WHEAT. — The mineral content of a plant depends on (a) the species and variety to which it belongs; (b) the composition of the soil; (c) weather and other meteorological influences. In consequence of the plasticity of plants these three factors are able to produce considerable variations, which have however been little studied, in the mineral equilibrium of plant protoplasm. With a view to studying the influence of the single factor, "variety", on the mineral composition of wheat, two vigorous varieties, "Hindi" and "Baladi", which are comparatively poor in nitrogen, have been grown, mainly in Egypt.

And, seeing that from a food point of view special importance is attached to the balance of Mg, K and Ca, mineral analyses were carried out, expressing the results in milligram equivalents by the formula  $\frac{\text{MgO}}{\text{K}_2\text{O CaO}}$ , comparing the Hindi and Baladi wheats (1931-32 crop) with 12 new hybrid varieties produced in recent years under the direction of the Ministry of Agriculture in the hope of obtaining varieties richer in gluten. These varieties are healthy, high yielding wheats, grown the same year on the same land near Cairo; the soil and climate factors are thus identical.

The following table shows the large differences in mineral content due to the single factor "variety".

TABLE I -- Varietal differences in mineral content.

	Hindi	Baladi
Ash . . . . .	1.553-1.816	1.716-1.817
K <sub>2</sub> O . . . . .	0.409-0.474	0.482-0.508
Na <sub>2</sub> O . . . . .	0.016-0.055	0.035-0.052
CaO . . . . .	0.069-0.071	0.050-0.061
MgO . . . . .	0.222-0.249	0.196-0.222
P <sub>2</sub> O <sub>5</sub> . . . . .	0.056-0.087	0.085-0.0817
$\frac{\text{MgO}}{\text{K}_2\text{O CaO}}$ (mgm. equiv.) . . . . .	0.91-1.03	0.79-0.94



A comparison of the mineral formulae of these wheats with those of the 12 new hybrids shows differences of the following proportions :

$$\begin{array}{l} \text{Ash } 1.76-2.55 \\ \text{K}_2\text{O } 0.305-0.490 \\ \text{P}_2\text{O}_5 0.466-0.728 \\ \frac{\text{MgO}}{\text{K}_2\text{O CaO}} (\text{mgm equiv.}) 0.35-1.17 \end{array}$$

These results, more particularly those concerning magnesium, are of importance. The lowest magnesium content encountered in the numerous analyses made of Egyptian and other wheats was 0.150 % (French hybrid 23). In the Hindi and Baladi varieties it was never below 0.196 %. The average for the French wheats is 1.76 %. Of the 12 hybrids studied 5 had less than 0.150 %, and one (Palestine 2) had only 0.079 % and that with a soil 15 times richer in magnesium than the best arable soils of Europe. Hindi wheat, on the other hand, reached 0.310 %, the highest content yet met with in the experiments.

Thus there exist varieties of wheat which do not readily assimilate magnesium, though their affinity for other elements is not correspondingly low. The factor "soil" may therefore not operate when the factor "variety" (and perhaps also "climate") is acting in a contrary direction. It is thus inaccurate to allow that a required mineral content in a plant may be obtained merely by modifying the composition of the soil with chemical fertilisers. From the point of view of food value it is not an indifferent matter whether Hindi 62 or Palestine 2 is consumed, the mineral equilibrium of these two varieties being totally different. It should not be forgotten that cereals provide the human organism with its principal supply of magnesium, which is the only element to counterbalance the excess of potash conferred in almost every other food and which cannot be replaced by any drug or chemically treated bread, etc. If, then, the whole wheat contains not even 0.100 % of magnesium it is unfit to produce a satisfactory bread from the point of view of food value.

The farmer must produce edible plants of which the mineral equilibrium is suited to human food requirements. This may be achieved by bringing into play simultaneously the three factors of soil, climate and variety. Neglect of one of these may provide products (principally cereals) which are perhaps fine from an agricultural standpoint, give satisfactory returns from an economic standpoint, but which do not fulfil their main purpose, because they do not give the consumer a mineral well balanced food.

(*Comptes Rendus des Séances de la Société de Biologie*, Paris, 1932, No. 39).

G. S.

**SUGAR BEET TRIALS IN 1932** — M. P. HADENGUE describes in the *Journal d'Agriculture Pratique* (Paris 1933, No. 3) some trials carried out with the beet varieties Mennesson B, Mette, Hilleshog and Vilmorin B. The experiments were arranged in 3 plots and aimed at testing the effects of fertilisers and time of sowing.

**Plot I** — Field of about 3 hectares, homogeneous sandy-clay soil. Fertiliser : 13,000 kg. of organic refuse containing 3.5 % nitrogen ; 226 kg. of 20 % cyanamide ; 200 kg. of 15.5 % ammoniacal calcium nitrate ; 500 kg. of 18 % agricultural phosphates from the Somme ; 200 kg. of potassium chloride. Sowing between 27 April and 2 May. Seriously attacked by rust. Lifted between 28 September and 6 October in the order in which the varieties are named.

*Plot II.* — Soil sandy-clay, slightly more clayey in the part sown with Mette. Fertiliser : about 40,000 kg of farmyard manure; 260 kg. of 20 % cyanamide; 150 kg. of 15.5 % ammoniacal calcium nitrate ; 500 kg of 18 % agricultural phosphate from the Somme ; 200 kg of potassium chloride. Sown 13 and 14 May. Growth fairly regular. The Mennesson was attacked by rust, but less than in the previous plot. Mette was not attacked by rust. Lifted between 25 October and 2 November. Each variety was tried on a plot of about 3 hectares

*Plot III.* — Soil homogeneous sandy clay. Fertiliser. about 40,000 kg. of farmyard manure; 250 kg of 20 % cyanamide ; 200 kg. of nitro-potash (16 5 % nitrogen and 25 % potash) ; 500 kg. of 18 % agricultural phosphate from the Somme. Sown 15 and 16 April. On about a third of the field (1 hectare) the growth was patchy and the beets slightly less thick than in the rest. Good growth maintained, no disease. Lifted 3 and 4 November. Each variety was grown on a plot of about 80 ares

The yields per hectare were as follows —

	Varieties			
	Mennesson B.	Mette	Hilleshog	Vilmorin B
<i>Plot I</i>				
Number of roots per hectare at harvest	76,000	79,000	79 200	78,500
Weight per hectare in kg . . . .	39 230	35,700	35,800	32,200
Density . . . . .	7 9	8 1	8 2	8 2
<i>Plot II</i>				
Number of roots per hectare . . .	70,500	77,500	—	—
Weight per hectare in kg . . . .	37 500	36,900	—	—
Density . . . . .	7 68	8 29	—	—
<i>Plot III</i>				
Number of roots per hectare . . .		72 500	73,500	—
Weight per hectare in kg. . . . .		11 490	10,020	—
Density . . . . .		8 1	8 2	—

NEW METHOD OF PROPAGATING OLIVES — M. L. PALMA describes in *La Semente* (Genoa, 1932, No. 12) a new method of propagating olives suggested by Prof. D. CASELLA, Director of the Experimental Citrus and other Fruit Growing Station at Acireale, which has been tested over four years with satisfactory results.

The method is the following. At the time of pruning the most vigorous smooth barked branches are selected from healthy trees in full bearing. These are cut into lengths of 5-10 cm (diameter 2-3 cm.) and stored in sand in cool cellars until March or early April. They are then planted vertically or horizontally in furrows 15-60 cm apart and covered with a layer of fine soil 6-10 cm. in depth. As usual they must be protected from late frosts with a layer of straw and watered to encourage growth.

In each slip only the most vigorous bud is retained and the usual cultural care (hoeing, etc.) is given to the beds. At the end of the first year (in autumn or the follow-

ing spring) the young shoots are already well developed ; they are then carefully detached from the slips (the operation is easy as the bark is tender) and after disinfection of the exposed surface with an aqueous solution of sulphate of iron they are planted in a well-prepared nursery bed with good soil. They are spaced at 50 cm. in rows 1 metre apart. After 2 or 3 years they may be transplanted to their permanent quarters and have no need of grafting. According to the results obtained up to the present the plants propagated in this way are equal or even superior to seedlings and are well rooted.

The methods of obtaining seedling olives are also described ; these, though fruiting later, give a higher and more constant yield and are more resistant to frost, drought and disease (1).

A. P.

PHOSPHORUS FOR PLANTS IN A LIQUID MEDIUM. — Oats grown in a nutrient solution assimilate a quantity of  $P_2O_5$  proportional to the weight of the roots. The quantity of  $P_2O_5$  assimilated per 100 gm of dry matter of the roots gives a measure of the phosphorus assimilating capacity of the plant. This capacity diminishes with the age of the roots. It is also of interest to note that:—

(a) the capacity for assimilating phosphorus is much greater in plants lacking phosphorus than in those receiving a complete food ; (b) the coefficient of utilisation of  $P_2O_5$  diminishes with the concentration ; the  $P_2O_5$  supplied was completely consumed only in the case in which the phosphate solution was supplemented with small quantities of  $CaCl_2$  ; (c) the rate of assimilation of  $P_2O_5$  depends little on the nature of the cation ; it is accelerated by the addition of very small quantities of  $CaCl_2$ .

(*Zeitschrift für Pflanzenernährung, Düngung und Bodenkunde*, Berlin 1932, Nr. 3-4).

G. S.

## Tropical and Subtropical Agriculture.

### CULTIVATION OF 'PHORMIUM TENAX' IN ARGENTINA.

#### Area of cultivation.

The cultivation of *Phormium tenax* or New Zealand flax has of recent years become of some importance in the islands in the delta of the Parana. The present plantations are derived from specimens of the plant introduced about 35 years ago and planted in low-lying land liable to flooding. As early as 1910 certain enlightened farmers were struck by the exuberance with which the plant multiplied and knowing its economic importance in New Zealand undertook active propaganda work. It was not until 1923, however, that phormium had become of genuine importance. At the present time over 1500 hectares are under the crop.

In 1918 the first defibrating plant was set up and gave excellent results both as regards economic outturn and the quality of the product. In 1923 another plant on the model of the New Zealand installations was started at Parana Mini. This factory drains the production of the greater number of the plantations.

Other plantations are in the hands of a number of growers and are spread over the whole region ; they have an acreage varying from one to five hectares. A certain num-

(1) This system is very similar to that now commonly practised in Spain, called «garrote».

ber of growers have combined to form a co-operative society for installing a defibrating factory.

The culture of *Phormium tenax* is spreading also into other regions of the country : in the west of the province of Buenos Aires, in the low-lying land near the river Uruguay, at Tucuman, Misiones, etc

### Varieties.

Four varieties are grown on an industrial scale :-

(1) The commonest, which comes from the first samples introduced into the islands of the delta. The leaves are 4 metres long, of an intense green, pointed, and have a prominent midrib of a darker colour. The fully grown leaves have the upper quarter folded back

(2) The second variety, which is next in order of importance, is derived from seed imported from New Zealand in 1910. The leaves are rigid throughout their length and are lighter in colour and smaller than those of the preceding variety.

(3) A 'bronzed' form, fairly common, with wide, hard leaves, 3 metres in length. This variety is of interest on account of its high fibre content and because it can stand a cold climate.

(4) A variegated variety (leaves green with bands of a yellowish white), very common, has been tried industrially. The leaves are thin and wide and fold back on themselves at about a third from the tip. This variety has a high fibre content, and the fibre is very fine and greatly valued for making certain articles

### Propagation and Culture.

*Phormium* is propagated by seed or suckers

Sowing must be effected as soon as possible after the seed ripens (February), in well prepared soil, the seed should be scarcely covered. The seedlings must be watered frequently and protected from the sun, which is their worst enemy. The plants remain in the nursery beds until they reach a height of 0.2 m, and are then transplanted at 0.2 m apart in all directions. When they reach a height of 0.5 to 0.6 m they are again transplanted to their permanent quarters

For propagation by suckers the suckers are taken which grow abundantly round the base of the adult plants; they are planted directly in their permanent quarters, setting the plants 1 m apart in rows 2 m apart.

At the present time the Delta planters are able to supply all the seed and suckers necessary, at moderate prices.

### Cropping and yields.

The first crop is cut when the leaves have exceeded 2 metres in length, that is to say, four to six years after planting. The leaves are cut with a sickle at 0.2 or 0.3 m above the ground, with care to leave 2 or 3 leaves intact at the centre of the plant

The cut leaves are collected in heaps of 30 to 40 kg and sent as rapidly as possible to the factory for defibrating.

The yield in leaf varies with the age of the plant and the spacing allowed between the plants. For a first cutting with a spacing of  $2 \times 1$  m it should not be below 50,000 kg of fresh leaf per hectare, and it will increase steadily by 15,000 kg at each cutting until a maximum of 100,000 kg is reached.

The yield in fibre varies from 5 to 22 % according to the variety.

## Extraction and Preparation of the Fibre.

The operations for extracting and preparing the fibre for the market are as follows:—

- (a) Defibrating
- (b) Washing
- (c) Bleaching
- (d) Stripping
- (e) Winding and packing

Defibrating is effected directly without previous retting, which represents a great economy of time and labour. A skilled worker can deal with 1,200 kg of fresh leaves per hour.

## Products obtained.

The preceding operations produce fibre, tow, 'stripperslips' and waste.

The fibre is white, lustrous, flexible and elastic. The fibres are 1-2 mm. in diameter and 13-15 mm in length. The fibre is marketed in the form of hanks or balls of 2 to 2.5 kilos.

The tow and the stripperslips are the short fibres eliminated by the stripping or combing. They represent 10 % of the total fibre extracted.

(Cesar CORNELL, *Publication No. 877* of the Ministerio de Agricultura, Dirección de Publicaciones, Biblioteca y Canje, of the Argentine Republic).

J. L.

## Agricultural Engineering.

EXPERIMENTS ON ORCHARD HEATER SMOKE. — In the southern California citrus districts approximately 70,000 acres are provided with a total of 3  $\frac{1}{2}$  million heaters, worth about 5 million dollars. During the winter of 1930 a prolonged period of low temperatures required firing of about half of these orchard heaters for frost protection, in some localities thirteen nights out of fourteen.

The accumulation of smoke was so great that it even interfered with traffic in Los Angeles harbour. Even closed windows could not prevent damage to furniture, draperies, clothes and merchandise.

It was estimated that a third of the fruit would have been destroyed if the growers had not heated. The enormous value of frost protection is evident when it is realised that the citrus production in California is valued at about 53 million dollars annually.

Investigations have shown that the smoke from the heaters is not of importance for frost protection, its protective effect being practically negligible. Heaters producing smoke with over 20 grams of carbonaceous matter per pound of fuel burned are no longer allowed. If this regulation were strictly applied it would exclude about 1,350,000 old-type heaters and some modern heaters. There are now apparently smokeless heaters giving off only 2 to 5 gms of carbon per pound of fuel. These however are liable to smoke outrageously if not well kept. For this reason apparatus is being installed for measuring smoke output in the orchards, which will make possible effective frost control without the smoke nuisance.

(*Agricultural Engineering*, S. Joseph, Michigan, 1932, No. 6).

HORSE-GEARS IN STEEL. — The present crisis in farming is tending to give a new development to machines worked by animal power.

Labour and animal power are both cheaper than before the crisis and may be supplied on the farm itself without increased expense. Engines, on the other hand, require

a continual output for fuel and lubricants which may be a serious stumbling block, particularly for small farms.

There is therefore a tendency to return to animal worked machines. Amongst these figures the horse-gear.

The making of horse-gears was formerly very common on small farms, but had practically died out of recent years. This was due in part to the machinery in use being low yielding, the work of two horses scarcely giving 1 h.p. at the gear. There was also considerable loss of power through friction, and unnecessary wear caused by too large bearings and by lack of protection for the various parts of the machine.

With a view to eliminating these old defects work has been carried out in Germany on the construction of a new type of simple steel horse-gear, of compact form, which would be serviceable for the small farmer and give a good yield.

In the new apparatus all the gearing shafts are on roller bearings; the bearings are not supported but are simply connected by a steel box which is very strong and completely protects the gearing from dust or rain.

The total coefficient of efficiency of the machine is about 92-94 % and the weight is 300 kg.

(Prof. G. FISCHER, *Berichte über Maschinenprüfungen*. Stahlgöpel der Ardetwerke, Eberswalde, *Mitteilungen der Deutschen Landwirtschaft-Gesellschaft*, Berlin 1933, Nr. 3).

MANUFACTURE OF TRACTORS IN THE U. S. S. R. IN THE SECOND FIVE-YEAR PLAN. — According to the second five-year plan from 1933-37 the requirements in agricultural tractors will amount to about 14 million h.p. To this figure must be added the further requirements of about 2 million h.p. for forestry, industry, transport, etc. The capacity of Russian tractor factories at present, with those now in course of construction (at Stalingrad, Charkov and Tseliabinsk), is about 140,000 machines. It is hoped however to be able to increase the production of these three factories and that of the "Krasny Paltlowets" of Leningrad and so by the middle of 1937 to have a supply of 550,000 tractors, with a h.p. of about 10-11 million. This would still be 20 % short of the force required, but it is hoped to obtain the full figure by improving the efficiency of the tractors in construction.

(*Archiv des Landmaschinenwesens*, Berlin, December 1932)

H. J. H.

## Animal Husbandry.

### General

PRESENT POSITION OF THE LIVESTOCK INDUSTRY IN TURKEY. — Prof. O. WELLMANN of the Higher School of Veterinary Medicine at Budapest has been charged by the Turkish Government with the field study of the position of the livestock industry in the country. A brief summary of the results of his studies is to be found in *Köztelék* of Budapest (1932, Nos. 103 and 104).

In Turkey stock-rearing is almost exclusively the concern of the small farmers; stock-rearing by middle and large owners has not attained any high degree of development. The conditions of maintenance and feeding of the animals are generally mediocre; the animals are left on pasture both in summer and winter. The pastures are in very bad condition, full of thistles and infested with ticks which make a mass attack on the animals introduced and bring about piroplasmiasis. The meadows are also in bad condition. The grass is generally cut too late when it is already dry and has scarcely any nutritive value. The cultivation of lucern succeeds only by means of artificial irrigation.

Horse-rearing is most developed in Thrace, central Anatolia and the coastal regions. In Thrace the Rumelian horse is reared, a type improved with Arab blood but below average stature. In central Anatolia the most widespread breed is the Anatolian, a good horse of Oriental origin, with heavy bones. For the improvement of this breed half Arab broodstock from the "Chifteler" stud are successfully employed. The horses of the Chukurova breed are celebrated; they are the half-Arab horses corresponding to those reared in the stud of the ex-Sultan. The tallest horses belong to the Uzuniala breed. These were imported by the Cherkesses of the Caucasus who established themselves in the northeast of Anatolia. In the improvement of this last breed Hungarian Nonius are employed with considerable success. Turkey has three studs (Karajabey, Chukurova and Sultansuyun) rearing pure Arabs; one (Karajabey) rears English thoroughbreds and two (Karajabey and Chukurova) Nonius. Besides these studs, the vilayets possess stallion dépôts with 240 stallions (including 100 English Arabs imported from France, 20 halfbreed English and the rest Arab). In these dépôts there are also donkey stallions of tall stature from Cyprus.

As regards cattle it is especially the black short-horned type of Anatolian breed that is bred. The animals of this breed are of short stature but greatly resemble certain types of good milkers. In the west of Asia Minor and in Thrace cattle belonging to the "Primigenius" group are found but with shorter horns than the Podolian race of Hungary. These animals are used for milk and beef. As improvers bulls are imported from Bulgaria. In the east of Anatolia oriental bulls of Caucasian origin with red-brown coat are reared; these are the largest cattle found in Turkey. In the Adana area cattle of the Aleppo breed, greatly resembling those of Cyprus, are found. Attempts have been made to acclimatize almost all the European cattle breeds in Turkey but, owing to the bad local conditions, they have been in vain. These animals have only transmitted their colour and none of their good qualities. Relatively satisfactory results have been obtained with the Montafone breed.

The most important branch of stockrearing is that of sheep. The largest section of the sheep population is formed by fat-tailed breeds (Akkaraman Daglicht). Other breeds are, however, important, including Kivirzik, which resembles the Tzigayas sheep and Karayakam, resembling the Katzakas. As regards improvers, good results have been obtained by crossing combed hair merinos with Kivirziks. The greater part of the goats belong to the black Anatolian breed but the most important and best known breed is that of Angora, which supplies mohair, the raw material of Angora cloth.

E. M.

**DETERMINATION OF SEX BY THE KOSJAKOFF METHOD OF BIOCHEMICAL ANALYSIS OF THE HAIR.** — Of recent years several workers have experimented with the determination of the sex of animals by biochemical methods. In 1924 MANOILOFF published a work on his research on the subject in which he described a method which allowed of distinguishing the blood of males from that of females. In 1930 KOSJAKOFF published another method for determining sex by examination of the hair or feathers of the animal. This method is based on his observation that an alkaline solution of the hair or feather decolorised methylene blue more or less rapidly according to the sex of the animal from which it was taken. M. T. RADEFF, assistant at the Zootechnical Institute of the Veterinary Faculty of Sofia, publishes in the *Züchtungskunde* (1932, No. 12) the results of his studies on 278 horses by the KOSJAKOFF method. The following table shows the results in figures.

	Number of animals examined	Male reaction. Number of animals	%	Female reaction. Number of animals	%	Doubtful reaction	%
Stallions . . . . .	112	80	71.4	22	19.6	10	9
Mares . . . . .	37	4	10.8	26	70.3	7	18.9
Brood mares . . . . .	98	48	49	41	41.8	9	9.1
Geldings . . . . .	31	5	16.1	26	83.9	—	—

From these figures the writer concludes that the KOSJAKOFF method does not allow of accurate determination of sex from the hair. It shows however that there is a certain biochemical difference between the hair of the male and female. It seems, further, that the colour of the hair has no effect on the result of the KOSJAKOFF test.

E. M.

#### FEEDING

EFFECTS OF ALFALFA HAY AND IRRIGATED PASTURE ON GROWTH OF HOLSTEIN HEIFERS — At the Wyoming Agricultural Experiment Station (U.S.A) two groups of Holstein heifers were fed on alfalfa hay as a sole roughage during the winter and grazed on irrigated pasture during the summer. One group received two pounds of ground barley per head daily during the winter months, while the other group received no grain supplement. The results indicate that size of heifer may still be a factor influencing rapidity of growth on roughage alone even up to the age of 16 months. During the winter months the grain-fed heifers made an average monthly gain of 32 pounds as compared with an average monthly gain of 28.5 pounds for the heifers fed exclusively on alfalfa hay. The older heifers made larger gains than the younger ones on alfalfa alone. The heifers receiving ground barley during the winter made larger gains on pasture than the heifers fed alfalfa hay exclusively. Little significance can be attached to this fact, however in view of the limited numbers involved. Even though the grain-fed heifers grew at a more rapid rate, the two groups were very much the same size at 27 months. For that reason the growth of the heifers in Lot I (no grain supplement) may be considered satisfactory.

In this investigation there seem to be two reasons for the successful growth of heifers without grain: 1. The heifers were of sufficient size at twelve months of age to consume enough roughage for desirable growth. 2. The possible beneficial effect of the irrigated pasture (*Journal of Dairy Science*, Lancaster, Pa., 1932, Vol. XV, No. 6, p. 435-444).

S. T.

#### HORSES

THE ENGLISH THOROUGHbred IN GERMANY. — M. Charles de BEAULIEU publishes an interesting account of the breeding of the English thoroughbred in Germany (*Zeitschrift für Gestütswissenschaft*, Hanover 1933, Nos. 1, 2). According to the writer 3 phases in the breeding of these horses can be distinguished. The first is up to the end of the war. The first private studs which raised English thoroughbreds no longer exist. Amongst the present private studs the best known is that of M. von OPPENHEIM at Schlenderhan and that of the von WEINBERGS (Waldfried stud). Both were started



about the beginning of the present century. The State studs are those of Graditz which play a prominent part in the breeding of the German thoroughbred. The second phase dates from the end of the war and is characterised by a great development of horse racing, closely related to the breeding of the English thoroughbred as the sport gained in popularity, and by an increasing use of stallions bred in Germany. Out of the 50 winners in 1913 only 9 were German bred, the remaining 41 being imported, 26 of them from England; in 1929 33 winning stallions were bred in Germany and only 17 imported, 13 from England. The third phase began in 1931, it is characterised by a retrogression in breeding in consequence of the economic crisis which was then beginning to make itself felt. The number of thoroughbred English mares clearly shows the development of this branch of horse breeding. There were in Germany in 1849 152 pure bred English mares, in 1850 700, in 1888 411, in 1900 807, in 1913 944, in 1925 959 and in 1932 600.

The writer attributes this falling off not only to the crisis but also to a reduction in the prizes offered and the law of 1922 regulating betting.

E M

#### CATTLE.

TRACTION TESTS WITH "CALVANA" CATTLE. — On the occasion of the "Settimana pratese" tests were carried out on Calvana cows and heifers. The tests were designed to determine (1) the maximum force and the average force, (2) the maximum work output and the degree of fatigue. To determine the force developed by the animals, instead of the American dynamometer cart, an apparatus invented by Prof. VITALI was used. This is a simple automobile chassis loaded with sacks of sand and fitted with an automatic break which acts proportionately to the speed developed. A self-recording dynamometer gives a chart of the force exerted. Before and after the tests the weight, pulse beat and respiration of the animals were measured. The tests were carried out on a level road 90 metres in length, the force was tested over only the last 50 metres of the course after the animals had become used to the load.

To determine the output of work a pair of animals was harnessed to an ordinary cart having a load of two-thirds of the weight of the pair. The test course was 27 kilometres over an indifferent road with steep slopes and sharp bends. The maximum time of the test was fixed at 6 hours. Before and after testing the weight, pulse and respiration were measured.

E M

MILKING MACHINES. — A general inquiry has been undertaken in Great Britain which has served a useful purpose in providing details of milking-machines on a large number of farms, and in confirming the general impression that mechanical milking can generally be efficient and on many farms a definite economy. The Scottish inquiry indicated that little economy could be effected in herds below 40 cows, where wages were relatively high, or in herds below 60 cows with a comparatively low wage rate. The lower average figure in England and Wales points to the general utility of a machine quite apart from a purely cash economy, and shows that it is useful where local labour is limited or of doubtful efficiency, where the farm is run as a family unit and where general farm work, special contracts and regular delivery are important considerations (*The Journal of the Ministry of Agriculture*, 1932, Vol. XXXIX, No. 4, p. 317).

S. T.

# SHEEP.

COMPARATIVE BIOMETRIC TESTS OF THE GROWTH OF SHEEP FROM SINGLE AND TWIN BIRTHS. — Prof I. SCHANDI, of the University of Budapest, gives an account of the results of his investigation of this subject in the *Köztelék* (1932, Nos. 103-104). Using the method of variations he finds that there is no correlation between growth and weight at birth. The growth energy of sheep from a single birth is not superior to that of twins and no difference in the utilisation of foods was observable. An ewe which is the mother of twins produces, in the total of the embryo and the milk, a live weight of lamb one and a half times as great as that of the mother of a single lamb.

F. M.

# PIGS

PROMOTION OF PIG RAISING IN RUMANIA. — According to the *Nachrichten über den Vieh- und Fleischmarkt* (1932, No. 48) the Rumanian Government has concluded an agreement with a large London Syndicate of importers allowing a ten years' concession for the exploitation of two large abattoirs. The English Syndicate engages to cure 72,000 pigs in the first year and up to 120,000 in the following years. It is intended in general to produce bacon exclusively for the English market, which will be distributed in England by the firms that are members of the Syndicate. The paragraph is of interest which fixes, already for the first year, an importation from England of 1000 breeding animals of the Large White breed into northern Moldavia and Bukovina. The agreement has yet to be ratified by the Rumanian Parliament before it can enter into force.

E. M.

# POULTRY

INFLUENCE OF CERTAIN FACTORS ON EGG WEIGHT. Prof MARCQ and Dr DE VUYST, of the State Agricultural Research Institute at Gembloux, have attempted to determine the influence of certain factors on the weight of eggs. The results were as follows (1) Influence of age. with Leghorn - Wyandotte crossbreds the weight of the eggs of the second season was 11.4 % higher than that of those of the first and the weight of the third season eggs higher than that of the second (2) The coefficient of correlation between the weight and the number of the eggs was  $r = -0.130 \pm 0.152$  thus slightly negative, but not significant, that is, not allowing of the conclusion that it is impossible to select both for number and weight (3) The earlier pullets hatched at a given date lay, the smaller are the eggs. The difference between the average weight of the first ten eggs and the average weight of the year's eggs is greater the earlier laying begins. There is however no clearly defined positive correlation between the age of the pullet in days at the time of laying the first egg and the average weight of her eggs (4) With pullets, the weight of the eggs increases progressively from the beginning to the end of laying; this increase in egg weight is in a given breed parallel to the gain in body weight. In the case of adult hens, the maximum mean weight corresponds to the months of December and January and the minimum to June and July (5) It is known that in general a hen lays an egg a day for some days, then there is an interval followed by renewed laying; the best layers in the experimental pens had cycles of 3, 4, 5 and 6 eggs with intervals of one or two days. The best layers gave 25 eggs in 30 days, or 5 cycles of 5 eggs separated by intervals of 1 day; in each cycle the egg weight diminished progressively from the first to the last. The difference in weight is greater in hens which lay during

a whole cycle at a given hour than in those which lay according to a rhythm which allows of the accumulation of the materials required for laying eggs of equal weight.

According to the writers the character of laying large eggs cannot be regarded as homozygotic in the Mendelian sense.

(*La Revue de Zootechnie*, Paris, 1932, No. 12).

E. M.

## Agricultural Industries.

### Industries of Plant Products.

THE USE OF CARBONIC ANHYDRIDE IN REFRIGERATED TRANSPORT. --- *Chimie et Industrie* (November 1932) gives the following information :

The chemists of the United States Department of Agriculture have advised the use of carbonic anhydride in refrigerated waggons for fruit and vegetables, provided, however, that great precautions are taken, since the gas affects the odour of certain fruits, including peaches, apricots, strawberries and raspberries. There is, in fact, an "intermediate tolerance" in the concentration of this refrigerant as regards these products.

Various experiments have been made by utilizing different percentages of carbonic anhydride under different temperatures with a view to obtaining a method which has no effect on the products from twenty-four to thirty-six hours after loading.

Prolonged treatment is harmful, as also a too high percentage of refrigerating gas. The action of the carbon anhydride on the odour is proportional to the temperature. Thus, the same result is obtained by exposing peaches for one day to a temperature of 25°C with 25 % or more of refrigerating gas as for two days at 21°C, three days at 16°C or four days at 5°C.

Further, it has been observed that slow cooling of fruits is much more satisfactory than "rapid cooling." This opens up a new field for preserve factories utilizing low temperatures.

G. R.

APPARATUS FOR BOTTLING VEGETABLES. --- This new apparatus enables from seven to eight hundred bottles to be prepared in one hour. It has functioned very regularly for some time at the farm of M. Ch Duparc, Acacias, Geneva.

The apparatus is economical, simple and strong; its regulation according to size of bottle and species of vegetable is simple and easy.

(*La Revue Horticole Suisse*, Chatelaine, Geneva, No 1, January 1933).

G. S.

### Industries of Livestock Products.

THE STANDARDISATION OF DAIRY PRODUCTS IN SWITZERLAND. — In the special issue of the Communications of the Veterinary Office and the Agricultural Section of the Federal Economic Department (*Landwirtschaftliches Jahrbuch der Schweiz*, Bern 1932, Heft 2), Strüssi D., Inspector of the Central Union of Swiss Milk Producers, makes an exhaustive study of the question of the standardisation of dairy products in Switzerland. In the first part, he deals with the basis, systemisation and importance of standardisation in general. In the second part, he studies the standardisation of the Swiss dairy industry and makes very interesting proposals for the standardisation of milk and various dairy products. His proposals for the standardisation of milk for consumption in the fresh state, butter, Emmenthal cheese, condensed milk, etc., are relevant to the needs

of the moment. The project for the creation in Switzerland of standards for fresh milk is particularly interesting as this question is also being studied in other countries. The project comprises four standard grades: grade A, ordinary fresh milk sold retail; grade B, pasteurised bottled milk; grade C, preferred fresh milk and grade D, special fresh milk.

In the average towns of the temperate zone, ordinary fresh milk is generally sold. It account is taken of all the conditions imposed on the supply of fresh milk, the latter might just as well be adopted from the point of view of hygiene, as pasteurised milk, or even preferred. When the milk is delivered in the crude state, the consumer boils it. The following is the project of standardisation of milk for retail proposed by the writer for the four grades of milk. Grade A requires that the milk shall be simply refrigerated by the producer and transported to the collecting centres where it is strained, refrigerated and transported to the central dairy depôts of the towns. Arrived at the central dairy, the milk is centrifuged, refrigerated and tested from the points of view of hygiene and composition. Lastly, the milk is delivered to the retailers. Grade B is treated in the same way but is, in addition, pasteurised before being delivered to the retailers. The former grade is generally for family consumption, whereas the latter is more suitable for travellers and hotels. After pasteurisation, the milk is poured into bottles and the latter are hermetically closed. Grade C, "preferred" fresh milk, should serve only for special purposes such as the feeding of infants and invalids. Its price being rather high, sales are limited. The question of hygiene is of essential importance as regards the standardisation of grade C which is produced on the farm under the best conditions possible, freed of impurities, refrigerated and transported to the central dairy where it is again refrigerated and bottled. The project of standardisation of grade D, "special" fresh milk, differs from that of grade C in that it is treated with ultra-violet rays. This milk is especially intended for infants of 1 to 6 years of age, 60 % of which are, according to statistics, more or less subject to rickets.

In addition to the standardisation of fresh milk, the writer furnishes projects for the standardisation of butter, Emmenthal cheese, processed cheese, cheese flavoured with aromatic herbs, condensed milk and other types of preserved milk.

E. G.

## Agricultural Training.

AGRICULTURAL TRAINING IN RUMANIA. -- From an interesting study by M. T. MANDRU, Director of Agriculture in the Rumanian Ministry of Agriculture, published in *L'Est européen agricole* of October 1932, it appears that agricultural education has undergone a notable extension since the agrarian reform of 1910, completed in 1920 and 1921. The agrarian structure of Rumania has been completely changed, 6,000,000 hectares having been transformed into small holdings. Small holdings now make up almost 90 % of the cultivable area and as a consequence the reform of agricultural education has been necessary and has actually been carried through in 1929.

Agricultural training now comprises four stages —

(a) *Higher education* for young men and women is cared for by two Academies of Higher Agricultural Studies, one at Bucharest, the other at Cluj, as well as by the agricultural section of the Faculty of Sciences at Jassy.

(b) *Secondary education (second grade)* for boys and girls separately. For boys there are three special schools, one for agriculture at Roman (in Moldavia), one for horticulture near Bucharest and one for viticulture at Kichinev; for girls it is planned to create schools of domestic economy of the second grade.

(c) *Primary education (first grade)* is provided ---

(1) for boys in 23 primary schools.

(2) for girls in 17 schools of domestic economy.

(d) *Popular education* is provided in 21 winter schools for boys and 15 schools of agricultural apprenticeship, as well as by travelling teachers, according to the needs of each region. The establishment of seasonal schools of domestic economy for girls is also planned.

The two Academies of Higher Agricultural Studies are under the Ministry of Agriculture and Domains while the agricultural section at Jassy is under the Ministry of Education and Religion. Secondary, primary and popular education are directly dependent on the Ministry of Agriculture and Domains.

#### *Higher education*

The law of 1929 refers only to the two Academies of Higher Agricultural Studies at Bucharest and Cluj, the agricultural section of the University of Jassy is organized under the rules of that University.

The object of higher education is to prepare technicians and specialists for agricultural institutions, public or private, and teaching personnel for secondary, primary, travelling and popular education, as well as to furnish the necessary preparation for the sons of large and middle landowners who intend to undertake the management of their holdings.

The Academies of Agriculture at Bucharest and Cluj are institutions of university rank. Their organization is the same as that of the Universities, each having at its head a rector. For the progress of higher education the Agricultural Education Senate, composed of the rectors and pro-rectors of the two academies and of eight delegates, four for each Academy, is responsible.

Young people of both sexes who have obtained their matriculation (*baccalauréat*) are accepted for higher education. Agricultural matriculants (*bacheliers*), that is, those who have passed the examinations of the agricultural secondary schools and a special matriculation are also received. In the Academies of Higher Agricultural Studies the course lasts for five years (one preparatory year, three years of study and one of practice), after which the degree of *ingénieur agronome* is awarded, with the right to inscription in the Agricultural Service. The *ingénieurs agronomes* desiring to specialize in a particular branch are obliged to take a further specialized course of one year during which they devote themselves to laboratory and field work.

The law also provides for a doctorate in agriculture in accordance with the university regulations. In the agricultural section at Jassy the diploma of *ingénieur agronome* may be acquired after three years of study.

As higher agricultural education in its present form dates only from three years ago the results obtained can hardly be properly appreciated. It may, however, be said that the law should be revised. In particular it appears that specialised teaching is not sufficiently organized. At present specialization is obligatory only for those who intend to become teachers. It may happen, however, that an *ingénieur agronome* who is not at all specialized at the conclusion of his school course, may later feel this need, if he wishes to take up teaching or to become an expert. From this point of view specialization should be compulsory as soon as academic studies are completed, since the candidate is then better acquainted with his subjects and the *ingénieurs agronomes* may then be more thoroughly prepared. The Academies provide opportunities for specialization in the following branches: (a) agricultural crops; (b) livestock; (c) agricultural economics; (d) agricultural cooperation and sociology; (e) agricultural chemistry and technology; (f) agricultural engineering.

At the same time the need is felt of equalizing the duration of studies in the agricultural section at Jassy and in the two Academies, since it is illogical that the degree of *ingénieur agronome* should be acquired in the different institutions after a different number of years of study.

*Agricultural secondary education (for boys).*

Agricultural secondary education is provided for boys and girls separately. For boys there are three special schools, for agriculture, horticulture and viticulture respectively.

The object of this training is to form an auxiliary personnel for the agricultural holdings and for agricultural institutions, for primary school teaching and popular education as well as masters (agricultural instructors) for primary education and supplementary teaching. The duration of the course is four years, of which one year is practical work spread over the whole course. On entering the school the pupils must be at least sixteen years of age and possess the diploma of an agricultural primary school or of the primary course of a high school or secondary school.

Secondary school teaching includes general and special culture. The former comprises the Rumanian language, elements of teaching, economic geography and, according to the school, French or German language. Special culture comprises a knowledge of the agricultural sciences, agricultural chemistry, agricultural economics, and so on. At the school of horticulture greater scope is given to knowledge of horticulture while at the school of viticulture viticultural studies are predominant. The subject-matter of general culture is the same for all three categories of schools. The teaching personnel of the secondary schools includes two teachers for subjects of general culture and from five to eight for special subjects.

The holders of diplomas awarded by the secondary schools may be admitted to a special matriculation examination in agriculture (*baccalauréat*), subsequent to which they may be enrolled for higher education.

Secondary education is a greatly felt need. The successful candidates in the examinations following this course have before them a vast field of activity both as auxiliary personnel for agricultural institutions and in the management of private holdings. At the same time they are suitable as auxiliary technicians for travelling instructors and popular instructors.

Secondary education is also taken up by the sons of large and middle landowners who do not possess the means or the necessary preparation to follow a course of higher education.

The experience of three years in the working of this system of education shows that the present law is in general satisfactory and that it requires only a few small modifications relating to the management and direction of the schools. Owing to restricted budgets it is possible that one or two of the teaching posts in these schools may be suppressed.

Experience has also shown that the agricultural matriculation, by means of which the young people who have completed the secondary course are admitted to higher education, leaves much to be desired. To be in a position to follow a course of higher training the student requires a good general educational grounding, corresponding to that given for the matriculation properly so-called. The young people who have passed for agricultural secondary education have not the general cultural basis of those who have completed their studies in the high schools and therefore cannot easily assimilate higher education. In view of a coming modification of the law it is probable that the agricultural matriculation will be suppressed. In other words agricultural

secondary education will form a closed circle. In addition, amongst the young people who have satisfied the secondary schools, a very restricted number have succeeded in being admitted to courses of higher education through the agricultural matriculation.

*Primary education.*

This education, also known as lower agricultural education, is provided in twenty-three schools, divided as follows :

- 14 schools of agriculture ;
- 4 schools of viticulture ;
- 1 school of agricultural trades ;
- 1 school of pisciculture ;
- 2 schools of horticulture

The object of agricultural primary education is to produce good managers for agricultural holdings or private services as well as a capable personnel for service in agricultural institutions

The teaching in these schools includes subjects of general culture and special subjects, according to the rules adopted in regard to secondary education but is more summary. These subjects are taught by from four to six teachers of whom one or two take general cultural subjects and the others the special subjects. Young people who have completed the primary school course and are at least thirteen years of age are admitted to the agricultural primary schools. The duration of the course is three years, including at the same time a course of practical agriculture. Young people who have satisfied these schools are qualified to take part in the examinations for admission to secondary education.

From the experience so far accumulated it would seem that the teaching in these primary schools is at present undergoing a crisis. The number of pupils is falling year by year and it is probable that a certain number of the schools will be closed or converted into winter schools.

The primary school is at the same time too arduous and too costly for the young peasants who wish to return to their small holdings and inadequate for the sons of large and middle landowners. The winter secondary schools and the courses of higher education are more suitable for the latter.

Another reason for which the secondary schools are being abandoned is that the arrangements in the present law allowing young people who have passed through these schools to be admitted to the rank of lower officials in certain agricultural institutions have just been annulled. As the law suppresses this right the only pupils who attend these schools are now the sons of peasants who intend to return to their own homes.

It is in any case under consideration whether it will not be advisable to create schools in which the teaching will last two years and will be more suitable to the needs of the small holders. The Ministry of Agriculture intends to make an experiment with this type of school, which will probably give satisfaction. A complete but more summary programme of a character to assure a more substantial preparation than in the winter schools is in view for these two-year schools. The instruction given in the two year schools will be designated elementary education. In short, the general tendency is to reduce the number of primary schools, retaining only those that will be well attended.

*Instruction in domestic economy for girls (domestic training).*

The law provides for primary and secondary instruction in domestic economy.

(a) *Secondary instruction in domestic economy.* — The object of secondary domestic education is to prepare good housewives and teachers of primary domestic education.

Girls of at least fifteen years of age are admitted. As regards other conditions the regulations applying to the general secondary education of girls are applied, with the difference that special attention is given to the rearing of domestic animals, bee keeping and sericulture. In addition there are courses on household arts such as the preparation of preserves, weaving and sowing. So far no secondary school has been established, but it is planned to open one next year.

(b) *Primary domestic education.* — This instruction is provided in seventeen schools. The course is similar to that in the secondary schools but shorter. The object is to produce good housewives. Girls who have attended four primary school classes are admitted. The duration of the course is three years but the law provides also for the establishment of schools of domestic economy in which the course will be of two years only. The teaching staff in the primary schools of domestic economy includes one mistress for general cultural subjects, one for agricultural subjects and three others of whom one is for domestic economy proper, one for sowing and one for weaving.

From the facts so far given it will be seen that the primary schools for girls are very useful and give good results. The girls' schools of this class are more largely attended than the similar schools for boys. For the sake of stimulating good rural management the education of girls is just as necessary as that of boys and in certain respects, even more important. A good housewife, capable and orderly, exercises a more direct influence on rural affairs than the man himself. In addition, while boys who have completed their studies at the school of agriculture have difficulty in finding a place if they do not themselves have an agricultural holding, a girl who has passed through the schools of domestic economy has already the capital of *savoir-faire* which assures her an agreeable life and an orderly household.

#### *Popular education*

The law relating to agricultural education of 1929 provides for the purpose of popularizing agricultural knowledge amongst the small cultivators, that instruction shall be given : —

- (a) in the schools ;
- (b) as practical instruction provided from place to place

Popular instruction in the schools includes : —

- (a) schools of agricultural apprenticeship ,
- (b) winter schools for boys ,
- (c) seasonal schools of domestic economy for girls

(a) *Schools of agricultural apprenticeship* — These schools function at the State agricultural institutions, farms and nurseries. Their object is the agricultural education necessary to the sons of farmers who do not possess the means to follow a course in a school with a more extended programme. The schools of apprenticeship are directed by a teacher and assistant. The pupils carry out full-time practical work in the holding attached to the school. The duration of the course is from two to three years, according to region. The boys who have passed through the course receive the certificate of a qualified workman.

(b) *Winter schools for boys.* — These schools aim, similarly to the schools of apprenticeship, at giving the necessary preparation to the sons of cultivators who have not the means of following a more complete course. Boys are admitted without distinction of age. The duration of the course is one or two semesters, from October to March. During the remainder of the time the pupils do practical work in their fathers' holdings under the direction of the teacher. These schools provide limited instruction in a few of the essential subjects and are directed by a teacher who moves from place to place.



At present there are twenty-one winter schools maintained by the State and a variable number organized by the Chambers of Agriculture.

(c) *Seasonal schools of domestic economy for girls.* — For the running of these schools the law provides the same regulations as for the winter schools for boys. None has so far been put into operation but it is expected that two primary schools for domestic economy will be converted into seasonal schools next year, in the poorest regions of the country.

#### *Travelling instructors.*

Instruction is given by teachers who move from place to place and by instructors employed by the State or by the Chambers of Agriculture. The programme is fixed for each region by the State Agricultural Service in collaboration with the local Chamber of Agriculture. The instruction comprises periodical courses, lectures, visits and demonstrations, consultations, dissemination of agricultural knowledge by means of publications, competitions, excursions, films, radio, etc.

The travelling teachers and instructors are distributed according to their special qualifications and to the nature of the economic regions; thus there are teachers of agriculture, instructors in viticulture and in horticulture, etc.

In addition there is similar instruction on the part of the schools of agriculture. Each school is obliged to make propaganda in its own region in so far as its teachers can find the time.

Instruction by travelling teachers and popular instruction will in the near future be greatly extended by the Chambers of Agriculture.

The new law relating to the Chambers of Agriculture provides that these institutions should have in the first place a general educational rôle and that they should gradually begin to organise agricultural winter schools and periodical courses to be followed by the peasants.

#### *General observations*

For the direction and stimulation of agricultural education there exists a special service under the Director of Agriculture at the Ministry of Agriculture and Domains.

This service comprises —

- (a) A General Council of Instruction;
- (b) A Permanent Commission of Instruction,
- (c) A disciplinary Commission;
- (d) An inspection Service

### **Agricultural Research.**

THE INSTITUTE OF PLANT PHYSIOLOGY AND AGRICULTURAL CHEMISTRY OF THE UNIVERSITY OF POZNAŃ — This institute, founded in September 1919 at Poznań, serves western Poland; its budget varies from 2,000 to 6,000 *złoty* per annum. The area of its farms is 18 hectares; the soil is sandy and overlies Bielica clay. The personnel comprises the director, M. JAN WOJCIECHOWSKI, three assistants and ten seasonal workers.

The Institute is at present devoting its attention to the influence of colloids on plant production and the rational use of organic fertilisers, manures and composts. It corresponds in Polish, German and French.

THE ROYAL HUNGARIAN AGRICULTURAL RESEARCH STATION OF MAGYARÓVÁR. — This station, founded in 1895, serves all Hungary; it is financed by the Ministry of Agriculture. The personnel comprises the director, M. I. GYÁRFÁS and three technicians.



FIG. 1. — Institute of Plant Physiology and Agricultural Chemistry at Poznan.



FIG. 2. — View of the Royal Hungarian Agricultural Research Station at Magyaróvár.

The area of the experimental land is four hectares, the soil varies, including clays, marls and humus. The station is occupied with all problems concerning plant cultivation (manures, pedology, soil improvement). In recent years its researches have been concerned principally with varietal experiments chiefly with lucern, the cultivation of Pannonian vetch, the relations of manures and plant diseases, nutritive requirements of plants, influence of manures and soils on the development of underground and aerial parts, a new method of estimating the fertilizer needs of the soil, the breaking down of phosphates.

The institution makes known the results of its work through special publications reports and leaflets, distributed gratuitously. The results are also published by the Ministry of Agriculture.

### Forestry.

THE ELIMINATION OF UNDESIRABLE TREES FROM FOREST STANDS — In the *Journal of Forestry* (Washington, D C. 1932, No 2) MACKINNEY A L and KORSTIAN C F, give a fully detailed account of their recent experiments in Southern Virginia, the object of which was to determine the relative costs and efficiency of the various methods adopted for eliminating from stands, chiefly consisting of valuable timber species, such trees and shrubs as interfere with normal forest development.

Previous experiments in this field have mainly had reference to the effectiveness of the various methods followed and have not been specially concerned with the economic side of the question, hence it was the desire of the writers to supplement and to complete the work of their predecessors. They chose for their studies a 12 ½ acre stand of loblolly pine (*Pinus taeda*) mixed with oak, maple, red gum and other hardwoods and bushes, which they divided into 3 sections. On the first section, which covered 5 acres, all the undesirable hardwoods over 2 5 inches in diameter were felled by axe or saw. On the second section (3 75 acres) many of the undesirable trees from 2-6 to inches in diameter were felled and the rest were girdled with a V-shaped notch from 1-5 to 3 inches wide while on the remaining 3 75 acres, most of the undesirables from 2.6 to 6 inches in diameter were cut down while all others were « frilled » and poisoned. The poison solution was made as follows: one pound of arsenious oxide was made into a paste with a little water and added to two pounds of lye dissolved in a gallon of water while the solution was still hot. The mixture was then stirred till clear and another gallon of water added. The liquid was introduced into the cuts with a gallon container such as is used for automobile batteries. The writers made careful observations of the time spent on each operation and a record was kept of the species and size of the trees subjected to this treatment. On the basis of a wage scale of 25 cents per hour the average costs were per acre for the areas treated \$ 2.37 for felling, \$ 1.38 for girdling and 1.83 for poisoning. Further economies could be made for the poisoning method by using commercial sodium arsenite and by employing one man only instead of two for carrying out the incision and the injection of the poison in a single operation.

The results of the time studies made showed poisoning to be the most time saving method and total costs were highest for felling and lowest for girdling. If however commercial sodium arsenite compound is used the cheapest method is poisoning. The definitive results of these tests were as follows: cut of a total of 86 girdled trees, a year following treatment 51 % showed dead crowns, 42 % showed many weak crowns while the remaining 7 % were reasonably healthy. On the other hand out of 242 poisoned trees the crowns of 85 % were dead at the time of examination and the 15 % still living were in very poor condition and the tops in most cases already dying.

An analysis of the data to determine the relative resistance of various species to crown mortality by girdling and poisoning gave inconclusive results. It however suggested that black gum (*Nyssa sylvatica*), red maple (*Acer rubrum*) and red gum (*Liquidambar styraciflua*) were most resistant in the order given, while willow oak (*Quercus phellos*) and white oak (*Quercus alba*) showed some resistance to the poison.

As regards capacity to produce sprouts after treatment, the poisoning method seemed to give the best results. For every hundred trees tested, of felled trees 68 % of the stumps sprouted, and of girdled trees, 58 %, while only 36 % of the poisoned trees gave sprouts at all and these were of smaller dimensions and weaker than those from the stumps and girdled trees.

In poisoned and girdled trees those treated nearest to the ground showed less sprouting than those treated at higher points. Hence in order that it may have its maximum effect as regards sprouting, the poison should be applied as close to the ground as possible.

S C.

DETERMINATION OF THE POWER OF RESISTANCE OF COLONIAL TIMBER TO THE EFFECTS OF WOOD FUNGUS GROWTHS. — Professor LUTZ of the National Institute of Colonial Agriculture in Belgium has recently published an article in the *Bulletin de la Société Centrale Forestière de Belgique* (Brussels, 1932, No. 10-11), dealing with the principles to be followed in determining the power of resistance of various kinds of timber to the action of destructive funguses. In alluding to the extension of the use of colonial timbers, the writer stresses the importance of supplementing the information usually given regarding the characteristics of timbers of this class by data indicating the power of resistance to certain fungi. Thus special research becomes necessary and the Professor recommends in this connection a sowing of pure myceliums on samples that have been sterilized instead of using ordinary rotting baths. If the ordinary methods are used bacterial action becomes superimposed on fungus action and the experiment loses its true value. The specificity of various kinds of fungus for particular kinds of wood is not due, as used generally to be supposed, to any particular affinity but is conditioned and disturbed by the presence in the woody tissues of substances which are really poisonous in regard to the fungus myceliums. Such substances exist in all kinds of wood, naturally in varying degrees, but in course of time they tend to lose their protective value as a result of lixiviation and of chemical changes produced by certain conditions when the timber is used industrially.

The vulnerability of timbers to fungus action is thus increased in proportion as the substances which have a toxic effect on fungus growths lose their power. Observation of the general behaviour of wood when attacked by fungus shows that two typical cases are to be noted : (a) wood which has passed the vulnerability point and has absorbed a quantity of water practically equivalent to that of its natural hygroscopicity; (b) wood saturated with water and similarly vulnerable. In the first case there is little to learn as to the way in which the woody matter becomes disintegrated. On the other hand, when the wood is saturated, the gradual destruction of the tissues assumes precisely the form observable in the process of gummosis in which the gummy mass mainly consists of xylane. The action of the myceliums would become most marked after the transformation of xylane into xylose, the xylose being almost completely destroyed as a result of fungus attack. During the course of his experiments the writer has been able to observe that the effect of fungus cultures on timber begins to be felt at the woody tissue and specially where thickening starts. So long as the lignin contained in these layers is not almost entirely converted into xylane the cellulose structure of the tissue is not affected.

In order that the descriptions of the various timbers may be completed by a notice of their relative degree of resistance to fungus action, the writer considers that it is necessary: (a) to establish an index of vulnerability against various destructive forces; (b) to determine the curve of the decrease in the power of resistance in the wood when once the fungus has got its hold.

Professor LUTZ essays for the first time to establish a vulnerability index for colonial timbers. He used sterilised samples completely saturated with water and then subjected to systematic and controlled maceration, or hydrolysis. Each stage of maceration was numbered consecutively 1, 2, 3, 4, etc. The samples at a given period were treated with pure germs of *Coriolus versicolor*, distinguished by the letter V and of *Stereum hirsutum* distinguished by the letter H. The following are some of the comparative results obtained: Beech, Iroko, Ebony, Macassar, 0 V, 0 H; Badi, 0 V, 1 H; Gleditschia 0 V, 2 H; Tsoumbou, 0 V, 2 H; Bilinga, 0 V, 3 H; Kevasingo, 0 V, 5 H; Mahogany, 0 V 7 H; Guaiacum, 1 V, 1 H; Tali, 1 V, 2 H; Padouk 2 V, 6 H; Oboto, 2 V, 9 H; Miamo, 4 V, 6 H; Azobé, 4 V, 7 H; Burmese Teak, 4 V, 9 H, etc.

In connection with the resistance curve of an affected timber sample, particular attention must be paid to the hydrolysis of the principal factor in resistance, namely lignin. The curve can be traced as a result of submitting the treated samples at regular intervals, for example every three months, to compression resistance tests

S C

**PROTECTION AGAINST AVALANCHES IN ITALY** A recent publication by the Commandant of the Forestry Militia (AGOSTINI A, *Attività della Militia Forestale anche nei riguardi della tutela dalle valanghe nelle vallate alpine e per la creazione di nevai permanenti nell'Appennino* Rome 1932, Tipografia interna del Comando Legioni Militia Nazionale Forestale) contains detailed information on the regulation and reclamation work carried out in the mountain areas of Italy. In the half-century previous to the advent to power of the Fascist Regime, the area re-afforested under State auspices was approximately at the rate of 1000 hectares annually and in 1922-23 only a little over 2000 hectares. On the other hand in 1930-31, 7,514 hectares were re-afforested and preparatory work had been carried out over further areas, giving a total of 9,362 hectares. In spite of the prevailing difficulties of an economic order, during the last decade this branch of improvement and reclamation work has been effectively quadrupled.

A great advance has been made by the Forestry Militia in its special activities for the prevention of avalanches and landslides. Damage due to these causes is most conspicuous when the trouble arises at a point above the forest zone and particularly where landslides and avalanches are frequently repeated in the same areas. The works executed by the Militia take different forms and include the following: reafforestation after preparation of the soil in the form of terracing and grading or by giving stability through piles, drainage and fencing, stone and cement masonry, etc. At the present time works of this nature are being carried out in eight of the provinces of Italy. The most important are the following: in the province of Cuneo, reafforestation of 150 hectares; of Vercelli, large scale construction of walls; of Brescia, rock-terracing and walls at altitudes of about 2,000 metres; of Sondrio, control and corrections of the Liro and Mallero torrents, of Gorizia, restoration work in the valley of Haut-Isonzo by construction works above the forest line and by reafforestation, etc.

Among the most important of the schemes in hand are those which have already been initiated in the provinces of Bergamo, Sondrio, Macerata, Brescia and Aosta.

THE INFLUENCE OF THE FOREST ON THE CLIMATE OF THE STEPPES AND ON THE YIELD OF FIELD CROPS. — The Forestry Research Station at Odessa has carried out a special study of the question of the influence of the forest on climate and agriculture in the steppe lands. The Research Station has an annual rainfall of about 450 mm., the heaviest falls chiefly occurring during the summer. The published reports of the Station supply evidence of the conspicuous influence on climate resulting from artificial reafforestation as also on the soil and in bringing about increased agricultural yield.

According to the data collected over the period 1918-1924, the monthly rainfall on the steppes bare of trees and the afforested steppes was as shown in the following table —

*Average rainfall in millimetres during the period 1918-1924.*

OBSERVATIONS TAKEN	January	February	March	April	May	June	July	August	September	October	November	December	Annual total (average)
On the steppe:													
treeless . . . . .	12.4	9.1	11.4	18.5	37.4	60.8	70.7	39.6	47.7	37.5	25.6	14.7	385.0
afforested . . . . .	19.5	16.5	16.9	19.9	46.7	55.7	69.2	46.8	51.5	41.3	34.9	26.2	445.1
Increase . . . . .	7.4	7.4	5.5	1.4	9.3	5.1	1.5	7.2	4.2	3.8	9.3	11.5	60.1

It is important to note that as regards the annual distribution of rainfall at the two points of observation, the increase of the rainfall on the afforested steppes is most noticeable during the colder period of the year, i. e., from October to March. The difference during the warm season (April to September) is not considerable and the amount of rainfall on the afforested steppes was actually slightly less than in the treeless area. No precise explanation of this phenomenon is as yet forthcoming.

According to the data collected over the 7-year observation period the average excess rainfall on the afforested area was approximately 60 mm.

Furthermore the observations made by the Station show that the climate of the afforested area is milder than that of the neighbouring treeless steppe of which the physical and geographical conditions are similar. The fact is brought out in the following table, which gives the amount of evaporation as shown by the Vilde evaporation gauge.

*Average monthly evaporation of moisture in millimetres during the period 1918-1924.*

OBSERVATIONS TAKEN	January	February	March	April	May	June	July	August	September	October	November	December	Annual total (average)
On the steppe:													
treeless . . . . .	4.9	2.6	14.2	76.7	159.5	130.7	125.3	144.2	107.6	49.9	11.9	4.0	831.5
afforested . . . . .	4.2	2.3	10.1	55.6	108.0	88.6	84.0	103.8	70.9	35.7	9.8	3.0	676.0
Reduction in evaporation . . . . .	0.7	0.3	4.1	21.1	51.5	42.1	41.3	40.4	36.7	14.2	2.1	1.0	155.5

The above figures show that the presence of the forest causes an annual reduction in the rate of evaporation, averaging 155 mm., i. e., roughly 20 %, the exact figure being 18.7 %.

The maximum reduction of evaporation is to be noted during the summer months, a matter of great importance for the national crops. The observations made at the Station also agree in demonstrating that the absence or presence of trees has a distinct influence on harvest yields and this can readily be understood when it is borne in mind that where the steppes are affected by drought, rainfall and evaporation become decisive factors in determining crop yields. The positive influence of the forests in this connection has also been proved by another Russian "Government", that of Odessa, of which the characteristic features are its more southern situation, lower rainfall (about 350 mm. annually) and higher evaporation rate. This during the summer of 1925 the writer made on the Bogdanovka Estate (Odessa) a study of the height of sunflowers growing at various distances from artificially reafforested ground with the following results —

*1st record of height of sunflower taken at a distance of 150 m from the forest*

70	—	80	—	90	—	100	—	110	—	120	—	130	—	140	cm	
1		4		10		12		15		6		3				(Number of examples of corresponding height)

Average height of sunflower (M) = 108.1 + 2.08 cm

$\sigma = + 14.7$ ;  $v = 13.56\%$

*2nd record of height of sunflower taken at a distance of 175 m from the forest*

100	—	115	—	130	—	145	—	160	—	175	—	190	cm	
3		13		27		4		2		1				(Number of examples of corresponding height)

Average height of sunflower (M) = 135.1 + 1.94 cm

$\sigma = + 14.1$

$v = + 10.43\%$

Again approaching nearer to the afforested land a *third record made at a distance of 85 metres* showed the following results:—

125	—	140	—	155	—	170	—	185	—	200	—	215	cm	
1		4		17		18		9		1				(Number of examples of corresponding height)

Average height.

M = 172.4 + 2.10 cm

$\sigma = + 14.85$

$v = + 8.61\%$

As regards the above figures it should be noted that the whole plantation of sunflowers is in three lines and forms a single whole, increasing in size in the direction of the forest and that the part situated between the two reafforestation belts is the most developed. Similar records were also taken for the diameter of the flowers.

It may further be noted that for oats growing between the protection belts, the part nearest to the forest for about a depth of 10 metres was in worse condition than the rest. This is probably to be explained by the excessive dampness of the soil and the washing out of carbonates. However this may be, when protection belts are planned on any considerable scale, steps must be taken to see to it that the herbaceous crops in

the immediate neighbourhood of the afforested area do not suffer. (Communicated by NICOLAS KOURTIKOV, Director of the Central Laboratory of the Ukraina Agricultural Improvement Institute at Odessa and Lecturer at the Odessa Institute).

**TREATMENT OF BABUL (*Acacia Arabica*) IN BERAR.** — The Forestry Literature and Reviews of India contain constant references to three species of trees, the sal (*Shorea robusta*), deodar (*Cedrus Libani* var. *Deodar*), and "chir pine" (*Pinus longifolia*), but only rarely are other species mentioned, some of them of not less importance, if less well known. Recently however VAHID has published in the "Indian Forest Records" (Calcutta 1932, vol. XVII, part. II, 42 pp., 10 illustr.) a careful study, giving the results obtained with babul (*Acacia Arabica*) in the Province of Berar.

The writer discusses the distribution of babul in Berar, the general history of babul forests, its silvicultural characteristics, methods of regeneration and the agri-silvicultural methods employed in Berar. He also supplies information on other species grown with babul, the external dangers to which it is exposed and the financial results obtained from the babul forests and their general utility.

The appendices deal with seed treatment, the principal uses of babul (for fuel and as timber) and its secondary products. The leaves and pods make excellent fodder for cattle, the gum is used for medicine and sweetmeats, the bark for tanning and in dyeing and medicine. Attention is also called to the possibilities of the babul in connection with intensive lac cultivation.

The scattered babul forests of Berar are everywhere surrounded by cultivated areas and are of particular value to an extremely poor class of peasant which they provide with timber, fuel and grazing lands. A further value has been added since the process of regeneration of these forests has been standardised according to a system known locally as *taungya*, under which 5-7 years of field crop cultivation is allowed during each 25 years forest rotation. The yield of cotton obtained from the *taungya* crops is so much heavier than that from the ordinary perennial farming of unmanured soils that the 5-year cultivation leases are in great demand.

VAHID's monograph deals in detail with the technical silviculture of *Acacia Arabica*, which, as a strong light demander flourishes under the *taungya* regime, always provided that special attention is paid to thorough weeding and frequent thinnings. Up to the present the only successful mixtures have been obtained with a certain percentage of *Azadiracta indica* and *Gmelina arborea*.

R. W.

## BOOK NOTICES

*Guide pour l'étude expérimentale du sol.* A. DEMOLON et Désiré LEROUX. Paris, 1933, Gauthier-Villars Ed., VI-214 pages, 72 fig., broché: 35 frs

[This is a text-book containing descriptions of a large number of early carried out experiments. A certain number of the experiments, hitherto unpublished, were demonstrated in the course of agricultural chemistry given up to 1930 by A. Th. SCHLESING at the National Academy of Arts and Crafts]

Intended to serve at the same time as a guide to instruction and to research, this work reviews, in the first part, the taking of a soil sample, soil composition, the clay colloids of the soil, its organic material, content of sand, lime and physical and mechanical analysis. The second part, devoted to the physical properties of the soil, examines its general properties and the relation between water and soil. In the third part, devoted to soil chemistry, a study is made of soil reactions, power of absorption and of solution,



The fourth part, concerning soil biology, deals with the soil atmosphere and the carbon and nitrogen cycles. There is also an appendix on chemical analysis of the soil.

This is a clear, well presented and profusely illustrated work which will render good service]. G. R.

*Contribution à l'étude des oxydations et réductions dans les vins. — Application à l'étude du vieillissement et des casses.* JEAN RIBÉREAU-GAVON 2<sup>ème</sup> édition, Bordeaux., 1933, Delmas Ed , VII-213 pages.

[This account of original research work on the action of oxygen on wines, is of great practical interest. The first chapter is devoted to the methods of determining the oxygen content of wines and to experimental technique. Chapter II studies the physical phenomenon of the solubility of oxygen which necessarily precedes the chemical phenomena of the oxidation of wine.; the latter are discussed in Chapt's, III, IV and V. Chapter VI deals with ageing. Chapters VII and VIII deal with ferric and copper « casse » The last pages of the work contain a bibliography indicating 84 references

The two main features of the work are. (1) the precise determination of the conditions governing oxidation during the processing, preserving and maturing of wines; (2) the determination of the effects due to the natural presence of metallic salts in wines

As a whole, this work forms an important contribution to the study of the chemistry of wines]

*Beitrag zur Forderung der Landeskultur*, Berlin W 35, Margaretenstrasse 8, 1933 Deutsche Bodenkultur Aktiengesellschaft

[The German Association for soil improvement has just published the seventh volume of the series "Contributions to the encouragement of soil improvement" The volume contains important articles on the increase in the use of labour for improvement work, unremunerated work by the unemployed, and the present financial questions with respect to improvements The work also deals with the technique of improvement of uncultivated lands, land reform, economic questions regarding fisheries, protection against floods and the breaking up of uncultivated lands by the development of existing farms. Lastly, reports are given on improvements made in Italy and Poland]. N G

*Cotton Year Book of the New York Cotton Exchange.* ALSTON H GARSIDE. Copyright 1932 by New York Cotton Exchange, 234 pages, 91 tables and 40 maps.

[This cotton yearbook, which is the fifth published by the New York Cotton Exchange, presents in an easily comprehensible manner statistics concerning world production and the distribution of United States and other cotton plantations as well as other interesting information on the cotton market

The yearbook also contains a cotton report calendar for 1933 in which are given all the important reports on the cotton market to be published in 1933 by government or private agencies and an explanation of the statistical terminology employed in the cotton trade.

The statistics of production, consumption and stocks contained in this yearbook show graphically the increase of world stocks which has caused the fall in prices of American cottons, a fall that attained its lowest point last summer. Comparison of the data on consumption of American and other cottons brings out very clearly the relatively large use of the former and the relatively small use of the latter during the last season. The statistics of consumption according to the large divisions of the industry show the great activity of the Oriental mills and the severe restriction of the activity of those of Europe and the United States J. I.

*Die Zukunft dem Fasan.* HEGENDORF F. C. MAYER. Verlag ; München, 1931, 280 p p. 190 photos, 6 colour plates.

[This work forms a good text book on the artificial rearing of pheasants. The author reviews the various phases involved . laying, incubation, rearing, maintenance and protection of the young birds ; he describes the methods which he has himself used and, in his capacity as a rearer and enthusiastic shooter, pronounces them to be excellent. Everyone desiring to take up this occupation will find very useful suggestions in the work].

E M

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# MONTHLY BULLETIN

OF

## AGRICULTURAL SCIENCE AND PRACTICE

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### EDITORIAL

#### **Certain Aspects of the Wheat Problem.**

A reference to the resolutions passed by the numerous International Conferences that have taken place in recent years would seem to show that the wheat problem has been considered in all its aspects.

As a matter of fact the chief interest has been concentrated on the methods of adjusting the balance between production and markets by means that are excellent in theory, including, e g., reduction of the area sown to wheat, the lowering of customs barriers, etc., but in practice no immediate practical results have accrued. Wheat has also been consistently regarded as a uniform type of merchandise in which the economic authorities of producing States only begin to be interested when the wheat comes to be sold to the industries which use it for breadmaking or other forms of conversion.

It seems desirable that the wheat problem should now be considered in its general aspects, including flour-and bread-making.

It appears to the present writer that the first step to be taken with a view to the settlement of the question of a temporary glut must be directed towards some form of increase in consumption. Even if regard be paid to the restrictions temporarily placed on the markets, it should be possible in this way to obtain some practical results.

When account is taken of the large number of bread consumers in the world it will be seen that even a slight change in dietary habits may have an enormous effect on wheat consumption. Thus the amount reserved for bread in human dietary tends to diminish as the food standard becomes more varied and rich. It is also suggested that the poor quality of the bread now sold to the consumer tends to reduce the amount and there must also be borne in mind the absurd theory of certain experts, which now exercises a strong influence among the well-to-do classes and makes bread responsible for all kinds of imaginary troubles in the human organism. Thus the problem of an increase in the consumption of bread involves certain hygienic, technical and psychological factors which require to be studied systematically and in all aspects. In a number of countries special efforts are now being made to improve the conditions of work in bakeries, either by the institution of competitions with the object of obtaining a good type of bread or by establishing regulations or other forms of encouragement for the development of scientific breadmaking by the introduction

of modern methods and plant with a high production capacity and gradually substituting them for small bakeries supplying a small number of customers only.

These efforts are well worthy of record but the effect on the world consumption of wheat is bound to be very slight because as yet the day is far distant before the necessary action is likely to be taken whereby a genuine wheat policy will be put in the place of the present sporadic movements. It therefore appears necessary to call the attention of the Governments, experts and growers to the desirability of initiating a general examination of the general problem of bread-making. The results of such a movement would be of the highest importance at such time as it is proposed quite properly to suggest other than merely ineffective remedies for the agricultural crisis.

GEORGES RAY.

## ORIGINAL ARTICLES

### Activities of the International Seed Testing Association, 1 July 1931 to 31 August 1932.

The first important undertaking of the Association was the preparation of the *Report of the International Seed Testing Congress of Wageningen*. This report, which runs to 400 printed pages, constitutes No. 18 of the "Proceedings of the International Seed Testing Association". It includes the text of the lectures delivered during the Congress and an account of its discussions and also of the proceedings of the General Assembly of the Association held on 17 July 1931. The principal outcome has been the adoption of the *International Rules for Seed Testing* and the *International Analysis Certificates* in international transactions concerning seeds. There are however States in which the Stations are not obliged to use the International Rules and Certificates. It goes without saying that for the issue of the certificates it is absolutely essential that the analyses should be made strictly in accordance with the International Rules, published in the Report of the Congress together with the models of the International Analysis Certificate, two forms of which have been adopted. These are: (a) a blue form to be used in the case of analytical results referring only to the sample examined; (b) a yellow form for results referring to a sample which may be considered as representative of the bulk lot examined, the lot having been sealed by an officer of the Seed Testing Station; the Certificate may thus serve as a legitimation of the lot from which the sample was taken.

The Rules for Seed Testing and the Certificates are supplied by the Seed Testing Station at Copenhagen. The Rules may be obtained on payment of 10 cents (U. S. A.) per copy. The first issue of the certificates was sold at 1 dollar for 100 copies. A further supply has been issued which will be sold at 75 cents per 100, or 6 dollars per 1000 copies. To ensure uniformity the certificates will for the present be printed at Copenhagen. The use of imitations of the International Certificates is not permitted.

It was determined at Wageningen to ask the advice of the Permanent Court of International Justice at the Hague and of the International Institute of Private Law in Rome as to the legal validity of the following clause appearing on the back of the International Certificate: "This certificate is issued with the understanding..... and it is further agreed that if a lower result is later found and maintained, the Station whose stamp appears hereon cannot be held liable for compensation". The Permanent Court at the Hague replied that no opinion could be given, but the Rome Institute stated that while it was clear that in principle the Testing Station could be compelled only to carry out the tests in accordance with the International Rules, it was thought advisable to adopt a formula which could in each individual case be signed by the person (buyer or vendor) applying for the seed test. This formula would be drafted as follows: "The Testing Station will not be held responsible, directly or indirectly, if a different result is later found and maintained". The Station would by this means have a declaration whose value could not be questioned by any Court, and the statement of doubtful value borne on the Certificate could be removed.

As this course, however, seemed impracticable Dr Franck and the writer agreed to retain the former statement which will in all probability be accepted by the Courts in most countries.

On 19 February 1932 the following questionnaire relating to the use of the International Rules was sent to a number of members of the Association:—

(1) Is your Station willing, on request, to carry out tests in accordance with the International Rules for Seed Testing adopted by the Congress of Wageningen and to indicate the results on the International Certificates and, if so, as from what date?

(2) Are you prepared to follow the International Rules when no special request to that effect is made? It is desired to know in particular if you intend to adopt the definitions relating to the determination of germinating capacity and, if so, as from what date?

The replies received, which were published in the Proceedings of the International Seed Testing Association (No. 1, 1932), show that the Stations are prepared to follow the International Rules for tests, either immediately or in the near future. The replies to the second question showed that the local Rules regarding the determination of germinating capacity had already been or would shortly be made to conform with the International Rules.

In consequence of the resolution passed by the Wageningen Congress in favour of carrying out comparative tests, samples have again been distributed this year. Dr. Franck sent a sample of each of the following species: *Brassica oleracea capitata alba*, *Brassica oleracea capitata purpurea*, *Brassica Napus*, *Brassica rapa* and *Brassica nigra*.

The Copenhagen Station distributed the following samples to 71 Seed Testing Stations:— 2 of *Trifolium pratense*, 2 of *Anthyllus vulneraria* and 5 of *Brassica campestris* var. *rapifera* with the request that the results of analyses should be returned at latest by 1 November 1932.

The main purpose of these tests is to learn whether consistent results may be expected, when the germinating capacity is determined by the percentage



of normal seedlings. The results should be identical, since the Stations have been asked to carry out the tests strictly in accordance with the International Rules. The Copenhagen Station also asked that the results should be recorded on the International Certificates.

Dr. Griessmann (Halle) recently distributed 5 seed samples of *Beta* accompanied by a questionnaire asking for particulars regarding the ordinary methods used by the various Stations in seed testing, and a letter containing certain instructions relating to the tests.

In regard to the question of abnormal seedlings, a questionnaire was added to the samples sent out by the Copenhagen Station, asking the Stations to state whether the abnormal seedlings were separated in accordance with the International Rules. It was also asked whether "broken growths" were considered as abnormal or if they were recorded separately under "worthless remainder". The Stations were further requested to state whether healthy seed, only swollen by the end of the germination test, was counted in whole or in part as germinated seed or if it was entered as worthless remainder. The last question was designed to discover whether individual Stations regarded as dead only the seed which decayed without having shown any signs of life.

The proposal of the State Seed Testing Station of Denmark to modify the Rules relating to the determination of germinating capacity, to the end that only normal seedlings should be regarded as having germinating capacity, has caused considerable anxiety among seed merchants and growers of crops for seed. One of the large firms dealing in vegetable seeds requested 13 other Danish seed merchants to distribute a series of similar samples taken by the Copenhagen Station to 9 of the leading Seed Testing Stations. On the writer's request the Stations were asked to carry out the tests of the samples in accordance with the International Rules. The results, when tabulated, were found to accord well in the case of certain Stations, while those of others showed considerable differences. This is undoubtedly due to different methods being used by the Stations and to the different methods of assessing the value of abnormal seedlings, some Stations having regarded a relatively small number and others a larger number of seedlings as abnormal. The former Stations would appear to have been too lenient and the latter too severe in counting the seedlings. Naturally the seed firms are utilising the results as proof that the adoption of the International Rules has not been very effective. Very close collaboration between the Stations is therefore necessary to give entirely uniform results. The Stations which obtained the most divergent results have been asked to test the samples again with care to ensure that the definitions fixed in the International Rules are followed.

It is desirable that the Seed Testing Stations should carry out experiments to determine whether all the types defined in the International Rules as abnormal are truly incapable of producing normal plants in the field. At the Copenhagen Station such experiments have been started. In this connexion, Professor S. P. Mercer, Belfast, and Mr. H. A. Lafferty, Dublin, have raised the question whether it is right to class among the abnormal seedlings those of which only the tip of the root is broken and which have produced vigorous adventitious

roots by the end of the test. This question will be taken up at the next International Seed Testing Congress and it would be useful to have experimental data on which to base the discussions.

The firm which carried out the enquiry mentioned above submitted to the writer the International Certificates on which the results were recorded. It appears, unhappily, that the International Rules have not in every case been carefully followed. For example: (1) the duration of the test fixed in the Rules is not always observed; (2) there are certain irregularities in the filling in of the Certificates. Sometimes the stamp of the Station does not appear in the top left-hand corner, sometimes the unused columns are not filled up with crosses and single ciphers are not indicated in the manner prescribed. In all probability the Stations prefer to follow their normal procedure. The writer however particularly requests the persons responsible for making the tests and filling in the Certificates to study carefully the International Rules.

There is little doubt that in practice the International Rules will be found to require amplifying or modifying in certain particulars. The writer requests his colleagues to send any suggestions to Dr. W. J. Franck, Chairman of the Research Committee, by March 1933 at latest, so that the question may be thoroughly studied before the meeting of the next Congress.

It was also decided at the Congress in Wageningen to continue the publication of the *Proceedings of the International Seed Testing Association* on the lines followed hitherto.

The writer desires to call attention to the *Bibliography* prepared by Dr. Franck (which is obtainable by members of the Association at the price of 7.50 Dutch florins and by non-members at 15 fl.).

A resolution was passed at Wageningen to continue the Bibliography following a card system. The annual subscription rate was fixed at 6.50 fl., provided that at least 100 subscribers were obtained. For the preparation of the 450 coloured cards required for the classification of the system a supplementary payment of 15 fl. will be necessary for the first year. For non-members the price will be double.

With regard to the plans for the next Congress, Mr. C. W. Leggatt invited the Association to hold the 1934 Congress in America, and Prof. H. Witte suggested that, if it were not possible to hold it in America, it should be held at Stockholm. In consequence of economic developments since 1931 the Executive Committee is of the opinion that only a relatively small attendance of European members could be expected in America in 1934, as was readily appreciated by Prof. M. T. Munn, the American representative on the Executive Committee, and by Mr. F. S. Holmes, Secretary of the Association of Official Seed Analysts of North America. Prof. Munn left the decision as to the place of the next Congress and the resolution in that regard to the European members of the Committee, who decided to postpone to 1937 the Congress to be held in America and negotiations have been begun with Prof. H. Witte on the question of holding the 1934 Congress in Stockholm.

K. DORPH-PETERSEN

*President of the International Seed Testing Association.*

# LIST OF MEMBERS OF THE INTERNATIONAL SEED TESTING ASSOCIATION AND OTHER EXISTING SEED TESTING STATIONS.

## A) MEMBERS.

### Germany.

- München* : B. Landesanstalt für Pflanzenbau und Pflanzenschutz, Liebigstrasse 25.  
 – Regierungsrat Professor Dr. G. Gentner.  
*Jena* : Landwirtschaftliche Abteilung der Versuchsstation, Schlossgasse 17. –  
 Hofrat Professor Dr. W. Edler.  
*Breslau* : Landwirtschaftlich-botanische Untersuchungsanstalt, Matthiasplatz 5. –  
 Dr. W. Grosser.  
*Bonn a. Rh.* : Landwirtschaftliche Versuchs-Station, Weberstrasse 61.  
*Harleshausen* bei Cassel : Landwirtschaftliche Versuchs-Anstalt.  
*Rostock* (Mecklenburg) : Landwirtschaftliche Versuchs-Station.  
*Bernburg* (Anhalt) : Landwirtschaftliche Versuchs-Station. – Professor Dr. W.  
 Crüger.  
*Hohenheim* bei Stuttgart : Württ. Landesanstalt für Samenprüfung. – Professor  
 Dr. G. Iakon.  
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 Dr. Filter.  
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 Professor Dr. Rössler.

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- Buenos-Aires* : Laboratorio de Investigaciones Agricolo-Ganaderas, Azopardo 900.  
 – Ing. Agr. Andrés Barcos.

### Austria.

- Wien* : Bundesanstalt für Pflanzenbau und Samenprüfung, 11/2. Lagerhaus-  
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*Winnipeg* : Seed Laboratory, Department of Agriculture, 812, Commercial Building. — F. Foulds, Supervising Analyst.

*Calgary* : Seed Laboratory, Department of Agriculture, Immigration Bldg., Alberta. — B. F. Forward, Supervising Analyst.

*Saskatoon* : Seed Laboratory, Department of Agriculture, 610 Ross Block. — T. W. L. Burke, Supervising Analyst.

*Sackville* : Seed Laboratory. — A. Hope, Supervising Analyst.

# Denmark.

*Copenhagen* : Statsfrøkontrollen, Fjords Allé 15, V. — Director K. Dorph-Petersen.

# Egypt.

*Guizeh* : Département de l'Horticulture, Ministère de l'Agriculture.

# Spain.

*Madrid* : Estación Central de Ensayo de Semillas, La Moncloa. — Director Antonio García Romero.

*Barcelona* : Estación de Ensayo de Semillas, Division Agronómica de Experimentación.

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*Dublin* : Seed Testing Station (Department of Lands and Agriculture), College of Science, Upper Merrion Street. — Director H. A. Lafferty.

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*Arizona* : Seed Laboratory, Agr. Experiment Station, Tucson. — Director I. A. Briggs.

*Arkansas* : Seed Laboratory, Agr. Experiment Station, Fayetteville. — Director J. E. Casey.

*California* : Seed Laboratory, State Department of Agriculture, Sacramento. — Director W. L. Goss.

*Colorado* : Seed Laboratory, Agricultural Experiment Station, Fort Collins. — Director Miss Anna M. Lute.

*Connecticut* : Seed Laboratory, Agr. Experiment Station, New-Haven. — Director E. M. Stoddard.

*Delaware* : Seed Laboratory, State Board of Agriculture, Dover. — Director Roydon L. Hammond.

*Georgia* : Seed Laboratory, Agricultural Experiment Station. — Director B. B. Higgins.

*Idaho* : Seed Laboratory, Agricultural Experiment Station, Boise. — Director Miss Jessie C. Ayres.

*Illinois* : Department of Agriculture, Division of Seed Inspection, Springfield. — Director Alb. C. Wilson.

*Indiana* : Seed Laboratory, Agr. Experiment Station, Lafayette. — Director H. R. Kraybill.

*Iowa* : Seed Laboratory, Agricultural Experiment Station, Ames. — Director H. D. Hughes.

*Kansas* : Seed Laboratory, Agr. Experiment Station, Manhattan. — Director J. W. Zahnley.

*Kentucky* : Seed Laboratory, Agricultural Experiment Station, Lexington. — Director W. A. Prieo.

*Louisiana* : Seed Laboratory, Department of Agriculture, Baton Rouge. — Director A. P. Kerr.

*Maine* : Seed Laboratory, Agr. Experiment Station, Orono. — Director W. J. Moise.

*Maryland* : Seed Laboratory, Agr. Experiment Station, College Park. — Director F. S. Holmes.

*Massachusetts* : Seed Laboratory, Agr. Experiment Station, Amherst. — Director F. A. McLaughlin.

*Michigan* : Seed Laboratory, State Board of Agriculture, Lansing. — Director C. A. Stahl.

*Minnesota* : Seed Laboratory, Department of Agriculture, St. Paul. — Director C. P. Bull.

*Missouri* : Seed Laboratory, Agr. Experiment Station, Columbia. — Director Miss Clara Fuhr.

*Montana* : Seed Laboratory, Agr. Experiment Station, Bozeman. — Director W. O. Whitecomb.

*Nebraska* : Seed Laboratory, Department of Agriculture, Lincoln. — Director Miss Elva L. Norris.

*Mississippi* : Seed Laboratory, Department of Agriculture, Jackson. — Director J. C. Holton.

*New Hampshire* : Seed Laboratory, Agr. Experiment Station, Durham. — Director Miss Bessie L. Glidden.

*New Jersey* : Seed Laboratory, Agricultural Experiment Station, New Brunswick N. J. — Director Miss Jessie G. Fiske.

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*Oklahoma* : Seed Laboratory, State Plant Board, Oklahoma City. – Director W. J. Lackey.

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*Rhode Island* : Seed Laboratory, Department of Agriculture, Providence. – Director M. H. Brightman.

*Tennessee* : Seed Laboratory, Department of Agriculture, Nashville. – Director F. H. Spanier.

*Texas* : Seed Laboratory, Department of Agriculture, Austin. – Director Wynona Robbins.

*Utah* : Seed Laboratory, State Board of Agriculture, Salt Lake City. – Director V. R. Thomassen.

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*Virginia* : Division of Plant Industry, Department of Agriculture, 112 State Office Building, Richmond. – Director G. T. French.

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*Washington, D. C.* : United States Department of Agriculture, Bureau of Plant Industry. – Edgar Brown, Principal Botanist in Charge.

*West Virginia* : Seed Laboratory, Agr. Experiment Station, Morgantown. – Director H. K. Rowley.

*Wisconsin* : Seed Laboratory, Agricultural Experiment Station, Madison. – Professor A. L. Stone.

*Wyoming* : Seed Laboratory, Agr. Experiment Station, Laramie. – Director A. F. Vass.

*Alabama* : Seed Laboratory, Department of Agriculture, Montgomery. – Director L. N. Allen.

*Nevada* : Seed Laboratory, College of Agriculture, Reno. – Director P. A. Lehenbauer.

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*Aas* : Statens Frøkontroll. — Docent P. Krosby.

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*Acre* : Government Agricultural Experiment Station.

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*Caesarea* : Station Expérimentale Agricole de la « Palestine Jewish Colonisation Association ». — Directeur A. Knazanoff.

*Mikveh-Israel* près de Jaffa : École Agricole de l'Alliance Israélite Universelle. — Directeur E. Krause.

*Beitgemal* : École Agricole des Frères salésiens. — Directeur Frère D. A. Sacchetti.

#### The Netherlands.

*Wageningen* : Rijksproefstation voor Zaadcontrole. — Direktor Dr. W. J. Franck.

#### Poland.

*Warszawa* : Stacja Oceny Nasion, Krakowskie — Przedmieście 64. — Dyrektor A. Sajdel.

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*Kraków* : Zakład Rolniczej Doswiadczalny Uniwersytetu Jagiellońskiego, Lobańska 24. — Professor Ed. Zaleski.

# R u m a n i a .

*Bucuresti* : Institut de Recherches Agronomiques, Section d'Amélioration des Plantes agricoles et de contrôle de semences, B. O. 207. — Professeur A. Montheanu.

# U n i t e d   K i n g d o m .

*Cambridge* : Official Seed Testing Station, N. I. A. B., Huntingdon Road. — Director A. Eastham.

*Edinburgh*, Scotland : Seed Testing and Plant Registration Station, East Craigs, Corstorphine. — Director T. Anderson.

*Belfast*, Northern Ireland : Seed Testing and Plant Disease Division, Queen's University, Elmwood Avenue. — Professor S. P. Mercer.

# S w e d e n .

*Stockholm* 19 : Statens Centrala Frökontrollanstalt. — Professor Dr. H. Witte.

*Linköping* : Frökontrollanstalten. — Agronome Trotzig.

*Lund* : Frökontrollanstalten.

*Skara* : Frökontrollanstalten.

*Oerebro* : Frökontrollanstalten. — Director J. Palmér.

*Harnösand* : Frökontrollanstalten

*Tång* : Frökontrollanstalten. — Director J. F. Sidén.

*Lulea* : Frökontrollanstalten. — Director A. P. Ulander.

# S w i t z e r l a n d .

*Oerlikon-Zurich* : Eidgenössische landwirtschaftliche Versuchsanstalt. — Dr. A. Grisch.

*Lausanne* : Etablissement Fédéral d'Essais et de Contrôle de Semences, Mont Calme. — Directeur G. Bolens.

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*Kosice* : Státní výskumné ústavy zemedelské, Ústav pro kontrolu semen, Letná ulice. — Dr. St. Bódis.

# U n i o n   o f   S o u t h   A f r i c a .

(No Seed Testing Stations).

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*Danzig* : Landwirtschaftliche Versuchs- und Kontrollstation, Sandgrube 21. — Dr. D. Heuser.

*Kurashiki* : Das Ohara Institut für landwirtschaftliche Forschungen, Provinz Okayama, Japan, — Dr. M. Kondo.

*Leningrad* : Institut de Botanique Appliquée et d'Amélioration des Plantes, 44, Rue Herzen — Professeur N. Vavilov.

*Lisboa* : Estação de Ensaio de Sementes e Melhoramento das Plantas, Belem-I-lisboa-Portugal. — Director Antonio Monteiro.



## B) NON-MEMBERS.

## Russia.

*Leningrad*: Samenprüfungsanstalt, Hauptbotanischer Garten.

*Briank'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung.

*Czerepovetz'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung.

*Engelhardt'sche* Samenprüfungsstation an der Engelhardt'schen landwirtschaftlichen Prüfungsstation (Baltische Eisenbahn-Station Durovo).

*Jaroslav'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung, Grajdanskaia 34. — Direktor Dwornikoff.

*Gomel'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung.

*Kaluga'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung.

*Kostroma'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung.

*Kuban'sche* (Kransnodar'sche) Samenkontrollstation der Kubaner provinziellen landwirtschaftlichen Verwaltung.

*Leningrad*: Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung, Prosp. Wolodarskago 37-39.

*Moskau*: Central Samenkontrollstation «Timiriaseff» an der Moskauer landwirtschaftlichen Abteilung, Samarski perenlok 5. — Professor I. P. Pavloff

*Moskau*: Samenkontrollstation der Moskauer landwirtschaftlichen Gesellschaft, Smolenski Boulevard 8. — Professor N. Rijoff.

*Nischni-Novgorod'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements Verwaltung, Martinowskaja 12.

*Novo-Tcherkassk*: Nord-kaukasische Samenkontrollstation, Ul. Dekabristow 42. — Direktor A. I. Nossatovski.

*Novozybkov'sche* Samenprüfungsstation, Novozybkow Gouvernement Gamet.

*Simferopol*: Krimsche Samenkontrollstation, Uliza Karla Marksa.

*Omsk'sche* Samenprüfungsstation der landwirtschaftlichen Gouvernements-Verwaltung. — Director A. Skorniakov.

*Orel'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung, Orel, — Director I. I. Pavlova.

*Perm'sche* Samenkontrollstation an der Perm'schen provinziellen landwirtschaftlichen Prüfungsstation.

*Pskov'sche* Samenkontrollstation an der Pskov'schen landwirtschaftlichen Prüfungsstation.

*Rjazan'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung.

*Rostov-Don*: Nordkaukasische Samenkontrollstation. — Direktor A. Grischenko.

*Samara'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung, Nekrassowskaja 22.

*Saratow'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung, Nikolaewsk 26.

*Smolensk*: Samenkontrollstation, N. Lazaretnaja 8. — Direktor S. Wargatsow.

*Tula'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung.

*Viatha'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung.

*Wologda'sche* Samenkontrollstation der landwirtschaftlichen Gouvernements-Verwaltung, III Dom Sowetow, Komnata Nr. 100.

*Woronesh'sche* Samenkontrollstation an der provinziellen landwirtschaftlichen Prüfungsstation, Uliza Engelsa 12. — Direktor N. W. Troslianski.

*Sverdlovsk* : Uraler Samenkontrollstation, Oblsu. — Direktor N. G. Kudriavtseff.

*Kasan* : Tatarische Samenkontrollstation, Kreml. Kommissariat der Landwirtschaft.

*Frunse* : Kirgisische Samenkontrollstation, N. K. S.

*Semipalatinsk* : Kosakstanische Samenkontrollstation.

*Nowo-Sibirsk* : Sibirische Samenkontrollstation, Uliza Krasnogo Prospekta i Spartakski Per. Sdanie Mollaboratorii S. K. S. U.

*Habarowsk* : Samenkontrollstation, Habarowsk Kraisu.

*Ufa* : Baschkirische Samenkontrollstation, Uliza Zurjupa 12.

#### Ukraine.

*Charkow* : Zentralsamenkontrollstation, Swerdlowa 1. — Direktor M. Ljwuschenko.

*Kiew* : Kiewskoe Oblastnoe Iprawlenie Gosudarstwennoj Semennoj Inspeksiji, Leninstrasse 46. — Direktor Iwanow.

*Ekaterynoslaw* : Samenkontrollstation.

*Odessa* : Samenkontrollstation, Institutskej 9.

(Communicated by the International Seed Testing Association).

### Experiments in Growing Dalmatian Pyrethrum in Madagascar and Argentina.

#### General Considerations

It would seem to be of interest to report some details concerning the cultivation and uses of Dalmatian pyrethrum, since its utilisation as an insecticide is becoming increasingly widespread as it becomes easier to obtain.

Pyrethrum belongs to the genus *Chrysanthemum* which includes a hundred species. It is known scientifically both as *Pyrethrum cinerariaefolium* and *Chrysanthemum cinerariaefolium*. In the pharmacopoeia it is called Dalmatian pyrethrum, Caucasian pyrethrum, etc. It is a herbaceous perennial, growing to a height of from 20 to 30 centimetres and may reach 50 cm. under cultivation. There is a tap-root penetrating deeply into the soil; the plant tillers abundantly. The flowers are terminal capitula, 3 to 5 cm in diameter, with a hemispherical involucre. The central florets are yellow, the marginal ones white. The former are female and the latter hermaphrodite.

The fruits are akenes; they are smooth and covered with a membrane generally in the form of a tufted pappus.

Pyrethrum came originally from Dalmatia and is found in Southern Europe and Eastern Asia. In the mountainous regions of Croatia and on the Dalmatian coast it grows at an altitude of 600 to 700 metres. It flourishes in light sandy soils but not in humiferous soils.

The seed is sown in spring when the frosts are over, directly in the field or in frames, and must at first be covered at night as a protection from possible

frosts. Planting out takes place in autumn in rows 0.5 to 0.8 metres apart, the plants in the rows being spaced at half a metre.

Culture consists only of hoeing to keep down weeds.

### Culture in the Argentine Republic

Dalmatian pyrethrum is grown mainly in the province of Cordoba. In this province flowering begins about a year after planting, usually at the end of October, and lasts for about a month and a half; at the end of December there is a second flowering and a third at the end of February.

The flowers are picked by hand; the gatherers walk between the rows picking the heads with a length of stalk attached; the bunches are dried protected from the soil and from rain. The leaves are harvested in the same way after the flowers have been gathered. If seed is required the flowers are left on the most vigorous plants; when the fruits are completely ripe they become dark grey or brown and open easily when pressed between the fingers.

The yield varies according to whether only the flowers, the leaves, or both, or the whole plant is used. The flowers alone may be said to yield 500 kg of insecticide powder per hectare; the flowers and leaves give 2000 kg. In experimental cultivation over 6000 kg. of dry matter per hectare was obtained, but in field cultivation such a yield would be difficult to obtain. In the trial plot (100 sq. metres) at Cordoba the following results were obtained: The flower heads were picked before they were completely open and dried in the shade, then the whole plant remaining was harvested.

Fresh flowers . . . . .	2,156 kg per ha
Dried flowers . . . . .	586 " "
Fresh plants without flowers . . . .	18,000 " "
Dried . . . . .	5,100 " "

Chemical analysis of the products gave the following results:—

Alcoholic extract of plants . . . . .	15.76 %
Alcoholic extract of flowers . . . . .	14.20 %

These extracts are dark yellow in colour, resinous in appearance, partially soluble in water. They have the characteristic odour of the pyrethrum flower. Toxicity tests carried out by the "fly process" (observing the time taken by a fly to die in a tube containing pyrethrum powder) showed that both extracts had an action comparable with that obtained with other powders or extracts prepared solely from the flower.

### Culture in Madagascar

Pyrethrum was introduced in 1928 at the Experiment Station of Nanisana by M. FRAPPA. The seed was sown at the end of February 1931 in a nursery, then planted out in June in rows 0.4 m. apart, with the same spacing in the rows. Growth was regular and only two waterings were given; flowering began in October and continued increasing in abundance until February. The yield was 10 to 20 grams of dried flowers per plant.

The toxicity of the powder obtained from these flowers was tested by the fly process and found to kill a fly in less than 3 minutes.

The regions of the High Plateaux are particularly suited to this crop as the ground is well exposed to the sun, drained, friable and without too steep slopes. The climate is not too severe for the plant. In this region it is recommended to sow at the end of February or beginning of March, in well-worked and manured soil, and to plant out the young plants in June in such a way that they occupy 10 to 15 times as much space as they did in the nursery. The soil must be furrowed and the plants placed on the furrows 40 or 50 cm apart (the space between the rows varies from 40 to 60 cm). Hoeing to keep down weeds is the only care needed. The first picking of flowers takes place in December of the same year, though the main crop is obtained in the second year. The flowers must be cut when the majority have begun to open. The heads are put to dry in shade, then kept in hermetically closed jars to prevent their properties being lost. At the present time the Station of Nanisana supplies enough seed to satisfy the demand.

### Preparation of the insecticide

The insecticide powder is prepared when the flowers or leaves are completely dry; they are freed from impurities (débris, soil, etc.) and ground finely in an ordinary mill. A very fine greyish powder is thus obtained, with a characteristic odour and a bitter flavour; it is free of risk to man and domestic animals.

Certain writers consider that the value of pyrethrum powder varies according to the part of the plant from which it is formed. The various powders obtained are classified in order of decreasing value as follows: —

- (1) Powder from stamens and petals only.
- (2) Powder from not completely opened flowers.
- (3) Powder from open flowers.
- (4) Powder from flowers and leaves.
- (5) Powder from flowers, leaves and roots

The insecticidal powder has a selective toxic action on insects. It is not mechanical, as was formerly thought (obstructing the tracheae so that death is produced by asphyxiation), but chemical. The susceptibility of insects varies with the species: the most sensitive are flies, fleas, lice, bugs, ants and aphides; most insects which attack cultivated plants show signs of poisoning under the action of this insecticide.

### Composition of pyrethrum

The average composition of pyrethrum is:

Moisture 4.5 to 7.5 %

Ash 4 to 8 %

Phosphoric anhydride 0.2 to 0.6 %.

Nitrogenous matter 0.2 to 2 %.

Pyrethrum contains also certain inert bodies (polytosterine, paraffin, pyrethrosine and a wax); an alkaloid, chrysantemine and essences.

### Insecticides based on pyrethrum

The powdered insecticides must be kept in hermetically closed containers because the active principle is volatile; insecticides in solution must be prepared with very hot water. The following are used as insecticides for dusting: —

- |                                |        |
|--------------------------------|--------|
| (1) Pyrethrum powder alone.    |        |
| (2) Pyrethrum powder . . . . . | 90 %   |
| Naphthaline . . . . .          | 10 %   |
| (3) Pyrethrum powder . . . . . | 50 gr. |
| Tobacco powder . . . . .       | 50 gr. |
| Boracic acid powder . . . . .  | 3 gr.  |
| Phenic acid . . . . .          | 10 gr. |
| Essence of limoncello. . . . . | 1 gr.  |

This last powder is reputed to be a valuable insecticide.

Mixtures, aqueous solutions, emulsions, etc. are also prepared.

Other countries where experiments  
in pyrethrum culture are being tried.

Experiments in growing pyrethrum are being tried in Spain, Austria, France (Montpellier), Italy and Algeria.

J. LEGROS.

#### *Publications consulted.*

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### **Present Conditions of the Management of Privately Owned Forests in Europe.**

It may be considered that the management of publicly owned forests has now generally been placed on a satisfactory footing, but this is by no means invariably the case with those forests that are the property of private individuals. The present position of schemes of management in privately owned forests is the result of an age-long evolution, which shows traces of economic and social tendencies belonging to various periods. If, in the past century, at a time when a greater degree of individual liberty was general, previous restrictions on private rights in connection with forest management were abolished, there is now a tendency to re-introduce them and in a still more stringent form. The reasons are well known. Among them there are included the following: the destruction of all private forests during and immediately after the war; the formation of new countries and also, and still more recently, the general economic crisis, which has brought into prominence, especially for the timber-importing countries, the particular importance of maintaining their forests in good condition, of securing a regular yield of timber and also of management on sound principles by the private owners of forest resources.

As a matter of fact, practically without exception, new forest legislation has already been introduced or is now being drafted in all countries, and it is to be observed that there is a remarkable resemblance between the new laws that have been adopted, a fact which suggests that new legislation in one country largely influences new legislation in others.

The International Institute of Agriculture, being aware of the value for each particular country of having information on the steps taken and on the results obtained elsewhere, has decided to prepare a report on present management conditions in privately owned forests. Hence it has sent a questionnaire to the various countries in the world, requesting *inter alia* information as to the legal provisions and restrictions affecting the methods of management by individual owners. More than 50 different countries have supplied valuable replies to the questionnaire and, as a result, it has been found possible to make a start with the report. Further time will however be required before the work can be completed in consequence of the large amount of material to be handled but in the meantime an attempt is made in the present article to give some account of the most important provisions now in force in the countries of Europe relating to forests of this class.

A mere statement of the measures that have been adopted cannot supply fully all the particulars required on the subject. As however the limited space of this Review makes it impossible to discuss the reasons behind the various laws, their history and development and the conditions prevailing in the several countries, it is proposed later to publish detailed information of this order in the monograph, to which reference has already been made.

It is thus clear that the present statement alone cannot pretend to give any comparative picture of the steps taken by the various States that can claim to be complete. It should further be borne in mind that this incompleteness is due partly to the fact that the Institute has so far not received replies from all the countries to the questionnaire that was issued.

*Germany.* — The area of the forest lands in private ownership is about 6,051,914 hectares, equivalent to 47.8 % of the total area under forest and to 12.9 % of the total area of Germany. Despite the importance and large extent of these forests, there is no clearly marked restriction on the freedom of the owners to manage them under schemes of their own devising.

H. WEBER, in his *Forstwirtschaftspolitik*, classifies the various States and divisions of Germany under two main categories: (1) those in which the methods of management in privately owned forests may be said to be entirely left to the owners' pleasure with the sole exception of those that serve for purposes of protection; (2) those where a certain amount of control is exercised.

The most important State coming within the first category is Prussia (see law of 6 July 1875). In the second group a distinction should be drawn between: (a) countries where the sole restriction is the prohibition to clear the forest lands and to change methods of cultivation unless previous permission is obtained. The most important example is Saxony (see law of 22 July 1924); (b) States where unauthorised clearance and destruction of private forests is entirely forbidden, e. g., parts of Bavaria (see legislation 1852-1896 and the law of 26 February

1908) ; States with restrictions as in (b), where in addition, by way of penalty, the management of such private forests may be provisionally transferred to the State Forest Department : e. g., Wurtemberg (see legislation 1879-1902) and Baden (see laws of 1833, 1854 and 1878 and the law of 25 February 1879).

The regulations regarding protection forests, including those in private ownership, are considerably stricter. Clear felling is everywhere prohibited except in Bavaria, Würtemberg and Gotha, where the competent authority may give consent. In Würtemberg, Silesia and Baden any excessive removal of dead leaves is forbidden by law, as also grazing and the removal of roots and stumps in Silesia. In some cases the nature of the rotation is established.

The forests in certain States may not be divided except with specific permission or in certain conditions. Such countries include Saxony, Hesse, Baden, etc., but in others, e. g., Prussia, Bavaria and Würtemberg, owners are quite free to divide their forest property. (The Institute has not yet received the reply from Germany and hence the information given above is not fully up to date).

*Austria.* — The total area of the forests in private hands is 1,920,000 hectares, representing 61.2 % of the total area under forest and 22.9 % of the total area of the country. The high importance of these forests in Austria is due, not only to their great extent, but also to their influence on the water system and the protection they afford against avalanches and landslides and also against strong winds. Among the provisions of the law of 3 December 1852 on private forests, which is still in force, the most important are the following : Prohibition of clearing forest lands and of transfer to any other form of cultivation ; compulsion to reafforest all cut over areas within a fixed period of 5 years ; prohibition to cut down forests and to take any action that may jeopardize the growing of trees on the forest soil ; prescriptions regarding protection forests (felling by narrow strips or selection felling, prohibition of removal of stocks and roots) ; restrictions on pasturing ; restrictions as to removal of soil and litter ; compulsion to employ expert foresters in the management of extensive forests ; right of the public authorities to visit and inspect all forests, etc.

Present legislation provides fairly satisfactory safeguards against excessive fellings or other forms of misuse of the private forests but fails to provide against excessive parcelling out.

Management of the forests of private individuals in accordance with approved working plans is not compulsory by law but in point of fact the majority of the more extensive private forest estates have their own special schemes. From this point of view four classes of private forests may be distinguished : (1) forests with an area of upwards of 1,000 hectares ; in this case management by experts in forestry is compulsory ; (2) forests of 100-1000 hectares ; experts are not as a rule engaged but in most cases a regeneration scheme is followed ; (3) forests with an area of 10-100 hectares ; regulation in such cases is a difficult matter and strict legislative provisions are of no great value ; (4) forests of less than 10 hectares ; although for this category a strict compliance with the law is required, the results obtained have been the least satisfactory.

In certain provinces there are special provisions, which are more severe than the general law. For example in Steiermark, where 86.4 % of the forest

area is in private hands and 45.9 % of the total area, previous approval of all fellings in the privately owned forests is compulsory with the sole exception of a small supply of wood for the personal use of the owner (See law of 8 April 1921).

*Belgium.* — Approximately 315,000 hectares of forest lands, equivalent to 56.3 % of the area of all the forests in Belgium and 10.3 % of the total area of the country, belong to private owners. These forests are of great value especially in the upper part of the country, where they serve as protection for the sources of the rivers, for the maintenance of watersheds in properly wooded condition, etc.

Legislation in Belgium before the war (Law of 19 December 1854) laid no restrictions on the rights of private owners and under this liberal regime the private forests were, speaking generally, prudently administered. The rise in the price of timber during the years immediately preceding the war changed the situation materially and, in addition, the war itself led to considerable wastage of forest resources. After the armistice the price of timber continued to rise and a number of private forests were ruthlessly exploited. The law of 28 January 1921 gave temporary power to the Government to intervene to prevent excessive fellings in forests belonging to private individuals, but only in cases where the preservation of the stands was of particular importance in the public interest from the point of view of the river system, of aesthetic amenities or of hygiene.

This temporary law was succeeded by the law of 28 December 1931, which is of a definitive character and gives power to the Ministry of Agriculture to intervene to prevent any abnormal or excessive fellings in privately owned woods and forests, when such a course is justified on grounds of general interest and of necessity. Such grounds would include the maintenance of the surface on the higher lands and on the slopes, protection of the soil against erosion and flooding, protection of dunes and coastlands, the safeguarding of hygienic and healthy conditions and the maintenance of the springs. The law requires no declaration from an owner who desires to carry out a normal felling and the veto of the Minister is only used when felling is in excess of the limits prescribed. (GÉNEAU). The owners concerned have a right to lodge an appeal against the Minister's decision with special Commission, consisting of a magistrate and two members appointed by the Higher Advisory Council for Forests. Whether this law as well as the law of 28 January 1921 is really adequate to meet the requirements of privately owned forests as regards protection, it is as yet too early to judge and it is necessary to have further experience.

*Bulgaria.* — The forests owned by private persons in Bulgaria occupy an area of 541,000 hectares or in other words 18.8 % of the forest lands or 5.26 % of the total area of the country. For the most part they are on a small scale and are distributed among 270,000 owners.

An important provision in the Bulgarian Forestry Code is the following : Privately owned forests in mountain areas or in protection zones, if belonging to a single tenant or if situated close to one another in small adjacent lots belonging to a number of owners, must be managed and exploited in common, on a co-operative or similar basis, after grouping so as to form forest areas with a superficies up to 1,000 hectares. When the owners of at least half such an area are agreed as to a joint management scheme, the State has the power to expro-



priate the sections belonging to the other owners and to bring them under the co-operative plan. If more than half the owners are opposed to joint action, the State has the right to expropriate their forests in the public interest.

In forests in protection zones and also in forests with an area of upwards of 10 ha. no felling can take place without previous authorisation. In other isolated afforested areas less than 10 hectares in extent, any form of exploitation is permissible but all fellings in such forests must also be made good within five years by natural or artificial regeneration methods. Timber cut in the forests of this category is inspected by the State Forest Authority and no timber may be removed from the forest without special permission for transport granted by the Authority.

In spite of the severity of these provisions, the law does give really adequate protection to the privately owned forests which begin to show a gradual tendency to disappear. Such control as there is is frequently insufficient to prevent illegal clearings.

*Denmark.* — Private forests occupy about 235,000 hectares, or 73 % of the total forest area and 5.4 % of the total area of Denmark. According to information supplied by C. M. MOLLER, the law of 1805 which is still in force remains the principal basic element of Danish forestry legislation.

It contains a series of somewhat stringent provisions whereby deforestation and destruction of the stands are forbidden, as also the pasturing of cattle, etc.

The majority of the forests in Denmark are "protected" and those that do not fall under this category may be deforested by the owners but so long as they remain forests they cannot be laid waste.

The law of 1905, in order to prevent speculative fellings, contains a provision that after the sale of a forest the new owner is forbidden to make fellings during the first ten years with a view to timber sales, except in accordance with the detailed instructions of the State Forest Inspectors. A law passed in 1906 prohibits the parcelling out of continuous forest areas in lots of less than 50 hectares.

In order to encourage the institution of co-operative societies, in which membership is confined to small forest owners, a class which is extremely numerous in Denmark, a law dated 1909 allows State subventions to such societies on certain conditions. This grant is based on the principle that the State pays half the salary of a properly qualified forestry officer engaged by the society in the capacity of a consultant expert and recognised as such by the Minister of Agriculture.

A law of 1919 on the transformation of lands held in fee into freeholds provides that such holdings shall not as a rule be divided into lots of less than 600 hectares. Thus it is made impossible to parcel out the forests on so small a scale that they will be unable to support an expert forester.

The reply from Denmark to the Institute's questionnaire has not yet come to hand; the most recent information is therefore not yet available.

*Spain.* — Privately owned forest lands occupy an area of about 17,400,000 hectares or 72.5 % of the whole afforested land in Spain and 34.8 % of the total area of the country. The law of 24 June 1908 which deals with reafforestation by private owners, contains regulations whereby provision is made for the stimu-

lation of their activities by means of premiums, exemption from taxation and free expert assistance, the last named however only in the case of protection forests. In practice this law has not been very strictly applied because of the difficulties of the internal situation of the country. The law of 24 July 1918 and the decree of 3 December 1924 are intended to prevent clearings and to limit fellings but here again they have only been given effect to a quite limited degree.

The decree-law of 27 July 1926 requests private owners to utilise and to reafforest their waste lands. If the owners do not take action in this sense the State has the right to take possession of these lands. In certain provinces in Spain forest products, especially timber, can only be removed by permission ; otherwise the sales are considered to be illegal.

All these regulations however do not provide satisfactorily for the maintenance of the privately-owned forests and do not serve to prevent the excessive parcelling out of the forest lands. In point of fact the law of 1908 does not regard as forest wooded areas of less than 100 hectares, the extreme limit which can be reached as a result of continuous subdivision.

*Estonia.* — The area of the privately owned forests is about 203,000 hectares, the equivalent of 20 % of the forests or 4 % of the total area of the country. The forests in Estonia are not of any particular importance from the point of view of hydrology, etc., on account of their small extent and scattered character.

The law with regard to the forests at present in force, represented by the former Russian law of 4 April 1888, allows considerable liberty in regard to methods of exploitation and the State intervenes only when felling becomes excessive and dangerous. The permission of the Committee for Forest Protection is required for any proposed clearing of forest lands for conversion into agricultural. Protection forests must as a rule be managed in accordance with schemes approved by the Minister of Agriculture. If the owner is unwilling to carry out the work required of him as a consequence of the scheme approved, the State may take possession of the protection forest.

The forest law at present in force is inadequate to safeguard the privately owned forests against improper exploitation and excessive parcelling out. The law relating to land taxation however encourages the afforestation of waste lands.

The State encourages the afforestation of private property by making grants to the Union of Forestry Associations, which is a private institution established for the purpose of developing forestry and of acting as an advisory body for all questions relating to the afforestation of privately owned lands.

*Finland.* — Privately owned forests properly so described cover 12,866,000 hectares, i. e., 51 % of the forests and 37.5 % of the total area of the country. If there are also included the forests which are the property of private companies, the total area of this class of forests is 14,794,000 hectares and the above percentages must be increased to 58.5 % and 43 % respectively.

The most important law relating to forests in private ownership (No. 161 of 11 May 1928) prohibits forest clearings and destruction, but when adequate guarantees for maintenance as forest and regeneration are supplied to the Forestry Council, the case is not considered as one of clearing. Nor is it a case

of clearance in the sense of the law when the area is cultivated as a garden or used as building land or for storage or for similar purposes. The same is true when the felling is made for the proper requirements of the owner, provided that regeneration is not compromised or again when it is intended to establish pasture lands in accordance with the personal requirements of the owner; in the latter case the situation and quality of the soil are taken into account.

There are also provisions which facilitate a general control. An owner who desires to carry out fellings with a view to the sale of the timber and also the holder of felling rights are under an obligation before starting to make a declaration in writing to the Forestry Council stating the exact area which it is proposed to exploit and the date when the work is to be put in hand. This obligation does not hold good when the timber is felled in accordance with an approved working plan or for purposes of necessary thinnings. Timber felled in a manner contrary to the terms of the law or the money obtained therefor shall be sequestered and the net profit on the sequestered timber shall be paid over to the Forestry Council for forestry improvements. It is not yet known how far these regulations fulfil their objects as the reply from Finland to the Institute's enquiry has not yet come to hand.

*France.* — The total area of the privately owned forests in France is about 6,449,000 hectares, representing 62 % of the forest area of France and 12.6 % of the total area of the country. The owners of forest lands play an important part in national life as they form a very numerous body of no less than 1,528,552 persons of whom 1,445,730 are holders of less than 10 hectares. The result is that no general measures relating to private forest property can be prescribed, if the opinion of the owners and particularly of the smaller proprietors is opposed to its entry into force. Thus the owner retains his freedom as regards felling in forests not specifically classified as protection forests and is only required to conform to the regulations which forbid the clearing of forest land.

The most important legal provisions are as follows:—

(a) The law of 19 July 1932 is the latest whereby the clearance of forest lands is prohibited and contains the following terms: Private owners have no right to uproot or to clear away their trees unless formal notice is given to the competent authority at least four months in advance. The owner can only begin the work of clearance after receipt of a statement that the authority has no objection and the right of clearance is valid for a period of 10 years only from the date of such statement. Opposition to a clearing scheme is only admissible in the case of timber, the preservation of which is considered necessary: (1) for the maintenance of the soil surface on mountain or sloping lands; (2) for the protection of the soil against erosion and flooding by rivers, streams and mountain torrents; (3) for the maintenance of springs and water courses; (4) for the protection of dunes and coast lands against encroachment by the sea and sand drifts; (5) for national defence; (6) in the interests of public health.

The regulations do not apply to: (1) young trees during the first twenty years after plantation or sowing, unless their preservation is required for one of the purposes referred to above; (2) enclosed parks and gardens less than

10 hectares in extent; (3) isolated woods having an area of less than 4 hectares provided they are not situated at the top or on the slopes of a mountain.

(b) The law of 2 July 1913 makes provision for the management of privately owned forests by the State under the following conditions: The Forest Service may undertake the responsibility for the preservation of the trees and management of the timber exploitation on behalf of private owners and societies in return for an annual payment and in accordance with conditions fixed by contract. This law is stated to work satisfactorily but is only applied to quite limited areas.

(c) Under the law of 16 April 1930 succession duties are reduced by three quarters in the event of transfers or deeds of gift, if the new owner consents for a period of thirty years to carry out a normal working plan as regards both stands and timber on the forest lands which have changed hands. It is claimed that this law reduces the tendency to the practice of making excessive fellings with the object of avoiding the payment of succession duties.

(d) The law of 28 April 1922 established a classification of certain types of privately owned forests as protection forests. The relevant text is as follows: « Forests the preservation of which is considered necessary for purposes of the maintenance of the soil covering of the mountains or of the hill slopes and of protection against avalanches and against water and sand encroachments may be scheduled as protection forests ». Protection forests are subject to restrictive provisions regarding the following: special management schemes, pasturing and other rights of user, system of exploitation, quarrying, etc., and removal of materials, while at the same time all fellings must have previous authorisation, in the absence of an approved management scheme, pasturing also must be limited to approved areas, and there must be general supervision of all working schemes by the Forestry Authority.

(e) The law of 6 December 1928 requires every owner, who wishes to cut down more than 20 chestnut trees at a time, to give the authority previous notice of his intention.

*Great Britain.* — Forest lands belonging to private owners cover 1,085,500 hectares, representing 88.3 % of the whole afforested surface and 4.8 % of the total area of the country.

The complete liberty allowed as regards the management of the privately owned forests has resulted in a more serious and rapid destruction of forest resources than in almost any other part of Europe. During the 30 years before the war, the Government exerted itself in vain in trying to combat the clearing of forest lands, the outcome of an absence of technical knowledge among the owners. The Forestry Act of 1919 represented a further strong effort to put a check on the reduction of the afforested area, but unfortunately it contained no restrictive clauses affecting the management of the forests already the property of private persons. Under the terms of the law the Forestry Commission has already carried out some important reafforestation work and has done its best to encourage private owners to co-operate by the offer of grants on condition that the Commission retains the right of general supervision.

There is no special legislation in Northern Ireland having reference to the administration of this class of forests, the Irish Land Purchase Acts merely containing a few not very severe restraining clauses. Only when the Government has provided funds for the purchase of an afforested Estate, is the owner unable to cut timber without previous authorisation from the Government Authority. Even then permission can only be withheld if the forest is considered as necessary for purposes of protection or on aesthetic grounds. It is also permissible, when leave to cut the timber has been granted, to covenant that a certain proportion of the cut-over land shall be reafforested. In Northern Ireland no forest is actually scheduled as a protection forest.

In Scotland there are no longer any laws that bring the owners of forests under any form of direct control and thus there are no restrictions on the fellings carried out by individual owners and they are not compelled to restore the exploited areas.

Indirectly however certain restrictions may apply to entailed estates but the number of such estates is a constantly diminishing quantity.

Neither in Northern Ireland nor in Scotland is legislation strong enough to secure the proper preservation of the forests which are privately owned. As regards the other parts of Great Britain, the International Institute of Agriculture is not at present in possession of the latest information as the official reply to the questionnaire has not yet been received.

*Greece* — The forests in private ownership cover 491,238 hectares or the equivalent of 20.4 % of the total area of the forest lands and 3.8 % of the total area of the country. If the forests belonging to monasteries and to charitable institutions are added and also the forests under the management of the National Bank, these figures would become respectively 611,514 hectares and 25.4 and 4.7%.

The principal provisions of the Greek Forestry Code relating to forests owned by private individuals are contained in law No. 4,173 of 17 June 1929 and may be thus summarised. The State inspects and exercises a general control over the forests belonging to this group. All such forests must be worked in accordance with plans prepared at the expense of the owners by the forestry experts (who are known as *dasologues*) and approved by the Minister of Agriculture. Owners whose forests are too small for effective separate management may form an Association for joint working in accordance with an approved joint scheme.

The management of forests used for pasturing or where established on denuded lands are subject to special restrictions. The law draws a distinction between protection forests and protection areas in general and those which give an *absolute* protection. Hence two groups are recognised. The first consists of forests and lands which require careful supervision in the public interest and are those which serve as safeguards against landslides and avalanches, removal of soil, floodings, erosion and sand drifts as also for the protection of forest growth at high altitudes. On the other hand afforested lands which serve, e. g., to protect lakes, water courses, roads, railroads, inhabited areas, places of interest, ancient monuments and bathing stations, must be managed, whoever be the owner, in such a way as effectively to meet their purpose. In these cases any work required by way of reforestation or of the correction

of the line of the streams must be taken in hand. If the owners refuse to undertake works which involve expenditure and they cannot be compelled to carry them out, the forests and areas where their execution is essential in the public interest may be expropriated. In "absolute" protection forests and zones all fellings which interfere with the continuous character of the forest or tend to cause erosion are absolutely prohibited.

The law also defines what lands should be declared as lands for afforestation or reafforestation, whether privately owned or otherwise. Such lands include: (1) areas where regeneration work has failed or is too sparse, which require reafforestation in the public interest; such are slopes of upwards of 40 degrees, catchment basins and lands calling for re-afforestation in the interests of public health or on aesthetic grounds, e. g., protection forests and protection zones; (2) agricultural lands within communes insufficiently supplied with forest and with an extension of over 4000 "*stremmes*" (1 *stremme* =  $\frac{1}{4}$  acre) up to 1.5 % of the total area, provided that the area so afforested covers not less than 12  $\frac{1}{2}$  acres nor more than 50 acres; (3) lands bordering on main roads.

Lands which have thus been declared to require reafforestation may not be used for any other purpose. If an owner refuses personally to put in hand an afforestation scheme, the State must become owner as the result either of a sale by consent or of expropriation. On any such area agricultural operations and the passage of animals are prohibited. In addition the law contains severe regulations intended to safeguard the forests against fire-risks.

This somewhat uncompromising law has come into force so recently that it is not possible to appreciate whether in practice it has proved effective.

(*To be continued*).

G. LUNCZ.

## GENERAL NOTICES

### General Agronomy.

#### ON THE FIXATION OF ATMOSPHERIC NITROGEN BY THE LEGUMINOSAE BACTERIA

— It is commonly thought that readily assimilable nitrogenous compounds have an unfavourable influence on nitrogen fixation by the nodule bacteria of the Leguminosae, by reducing the faculty of the plants for utilising atmospheric nitrogen. It has however frequently been observed that moderate dressings of nitrogenous fertilisers have a beneficial effect on the yield of legumes

It has now been proved by a series of scientifically controlled experiments carried out by H. BURGEVIN that the symbiotic fixation of nitrogen is not appreciably influenced by application of nitrogenous fertilisers, even with relatively heavy dressings, and that small quantities of nitrogen encourage the growth of legumes in the early stages and do not interfere with the fixation of atmospheric nitrogen by the plant later.

(*Comptes Rendus des Séances de l'Académie des Sciences*, Paris, No 6, 1933).

G. S.

THE REACTIONS OF SUPERPHOSPHATE IN THE SOIL. — In the *Comptes Rendus de l'Académie des Sciences* of 4 January 1933 MM. A. SANFOURCHE and JEAN HENRY discuss this question. It is often said that superphosphate is harmful to the soil because its

acidity decalcifies the soil and causes reactions which in certain cases lead to the formation of tricalcic phosphate. Thus there is a tendency to consider that the transformation of natural phosphate into superphosphate has no other advantage than to give it a more finely divided condition, which advantage is annulled by the risk of lowering the value of all soil which is not well supplied with lime. With regard to the simple reaction between lime and monocalcic phosphate, which is the essential constituent of superphosphate, there are differences of opinion among expert agronomists as to its final stage.

The note in question aims at rectifying these baseless assertions. It shows, in the first place, that the reaction between the pure substances can only produce as a final product the dicalcic phosphate, which is regarded as assimilable by legal and traditional criteria. Not only is the tricalcic form never produced but the dicalcic phosphate can itself be completed only in conditions which seldom occur in the soil. Further, when the pure monocalcic phosphate was replaced by superphosphate it was found that the reaction came almost completely to an end, in consequence of the protection of the colloidal substances occurring among the secondary constituents of the superphosphate. The important result is that both the assimilability in relation to citrate and the solubility in phosphoric acid water are preserved. Thus no attack of the lime and no injury to the soil are to be feared.

D. K.

**DISINTEGRATION BY HUMIC ACID ACCORDING TO MODERN THEORIES.** — The action of humus in the process of disintegration of rock has long been recognised, and is generally attributed to the acid products resulting from the transformation of organic matter (humic acids). More accurate studies have shown, however, that the quantity of humic acids thus formed is very small and that the kaolin forming action of the humic substances thus formed is also very low. The kaolin forming action of humic substances on rocks and soil (RAMANN theory) can be proved only in certain conditions in the actual disintegration processes. The profound transformations found by O. BEYER and D. HAEERLE in the decomposition of rocks and in the alteration of soils as a result of humic disintegration should be attributed chiefly to the  $\text{SO}_3$  radical. Later research by BLANCK (sandstone mountains of Sajonia, in Bohemia and in the regions of the mottled Triassic sandstones of Central Germany) shows that in the decomposition of organic matter the albuminoid sulphur-containing compounds liberate the sulphur which then enters into inorganic combinations. The experiments carried out show that forest humus and peat water both contain remarkable quantities of sulphuric acid. They also prove that in autumn leaves a precipitation of sulphur in the form of sulphates takes place on washing. Thus the problem concerning the action of humic acids on rocks and soils is cleared up.

(*Die Ernährung der Pflanze*, Berlin, 1 februar 1933, Bd. 29, H. 3).

G. S.

## Crops of Temperate Countries.

**WORLD ALFALFA PRODUCTION.** — Alfalfa has a very wide geographical range consequent on its adaptability to very diverse ecological conditions. It is cultivated increasingly in every continent for hay, or pasturage or even as a vegetable (Khiva, Turkestan, China) but more especially it is a fodder plant of temperate lands, though also widely cultivated in the tropics (India, Africa, South America). It is grown up to 4,500 metres elevation (India) and as far north as Upsala (Sweden) and is adaptable to both humid and arid climates.

It is in Argentina that the crop occupies the largest area : in 1930 about six million hectares. In that country it occupies 37 % of the cultivated land, from the tropical plains to the high mountains (3000 metres) and on lands essentially sandy. North America is its second great area of cultivation and it is there that the crop and its culture offer the greatest interest. Under the exceptionally favourable conditions of California, where growth is uninterrupted throughout the year, no less than eleven cuts may be made each year. Up to 360 stems have been counted on a single rootstock. In the United States continuous cultivation for 25 and even 45 years is not unusual. Imported species, particularly *Medicago falcata*, from all parts of the world, have been introduced into North America and have there given rise to specialized varieties. « Dry-land » alfalfa grows without irrigation in semi-arid conditions while " hardy " alfalfa resist the unfavourable conditions of the northern frontier. It is under these conditions that hybrid alfalfas (*Medicago sativa falcata*, Grimm, Cossak, Hardigan and Baltic are the best known) have enabled the crop to extend into the southern provinces of Canada and to attain a latitude 1 000 km. north of the United States frontier.

In Europe France is the principal grower having over a million hectares under alfalfa. In some Departments it occupies 21 % of the cultivated area. The peasants often grow alfalfa for three years for hay and for a fourth year for pasture. Sometimes it is included in the rotation, as commonly in Turkestan. In the Soviet Union, on the other hand, alfalfa occupies only about 300,000 hectares. Nevertheless the crop there presents considerable interest. The Soviet Union has supplied many of the varieties introduced into other countries, particularly into the United States. Transcaucasia has been particularly noted for its wealth of forms of the genus *Medicago*. The alfalfa of Turkestan is well known for the very large amount of seed it furnishes for the world market. It includes three very different types both morphologically and physiologically. These types are highly specialized and adapted to their country of origin and are not suited for introduction into countries where conditions are different. The name " Turkestan alfalfa " does not connote a homogeneous and well-marked type. On the contrary this product varies greatly with type and the accidents of mixing. The same applies to the so-called Italian, Provence, Peru and Cape alfalfas and to others. It would be necessary to state with greater precision the source of these seeds in order to enable their suitability for a given area to be judged.

It is of interest to note that according to a theory developed by KRYSTO the juice of alfalfa, by reason of its kumarin content, has the property of sterilizing mosquitoes of the malaria organism. In fact, according to the observations of this worker in Argentina, the Soviet Union and the United States, the regions in which plants containing kumarin are grown would appear to be more or less free from malaria.

(KLINKOWSKI, M., Die biologische Stellung der Luzerne im Spiegel der Weltwirtschaft *Archiv für Pflanzenbau*, Berlin 1932, Bd. 9, Nr. 2, pp. 234-292).

N. G.

ESTIMATION OF THE VITALITY OF SEED POTATOES. — In practice, to prevent degeneracy in potatoes seed potatoes are obtained from regions or countries which are known to produce potatoes of great vitality. It would, however, be very interesting to have a laboratory test indicating the vitality of potatoes. The plant selectors are particularly interested in knowing if their newly created varieties are resistant. Numerous works have been consulted to find some symptoms or properties which might indicate vitality, for example, juice density, appearance under X rays, electrical conductive capacity, the diffusion of colouring matter, etc. Three methods have been adopted. The most simple is that of Prof. BECKHOLD. The process is, in principle, as follows: A small blade of polished copper is half buried in a potato. The latter is left for some hours at



a temperature of 37° and is then cut open. The opening made by the copper blade is surrounded by a patch of dark colour. This patch is limited to the immediate vicinity of the opening if the potato is degenerating but if the potato is healthy it is found to be more extensive. It seems, on the basis of the experiments so far made, that this method gives exact results.

A more complicated method, but one which has given very precise results, is that of WARTENBERG and HEY: this is based on the determination of the relation existing in the tubers between the processes of oxidation and those of reduction, a relation which may be measured by electrometrical methods and which permits very exact conclusions to be drawn regarding the state of vitality of the tuber. The cost of the 30 tests made in this process, which suffices for the testing of a wagonload of potatoes or of a quantity of potatoes harvested from a given field, is estimated at about 70 frs, which renders this process applicable in practice.

A third process has been discovered and studied by MARX and MERKENSCHLAGER; this is based on the phenomenon of fluorescence of the juice extracted from potatoes under the influence of ultra-violet rays. This process apparently promises to yield good results when it has been more closely studied and perfected.

It is desirable that all the results of experiments made in this direction should be centralised in order to promote their unification and better utilisation. The society for research on potatoes (Kartoffelforschungsgemeinschaft) which brings together potato research workers interested in these questions and which has its headquarters at the Biologische Reichsanstalt of Berlin Dahlem, has expressed its intention of taking charge of this work (See: *Der Züchter*, 1932 No. 8; ; *Ibidem* 1932, No. 11, *Arbeiten aus der Biologischen Reichsanstalt*, 1932, Vol. 19, No. 5; *Ibidem* 1932, Vol. 20 No. 1; *Landwirtschaftliche Jahrbücher*, Vol. 76, No. 3).

THE POLISH HERB TRADE COMMITTEE. (List of medicinal, industrial, woodland and field plants, both wild and cultivated, in Poland). — This Committee was set up in 1930 to co-ordinate the efforts of institutes and private persons promoting the protection and utilisation of Polish laboratory and industrial plants. In this first work the general information on the organisation and functions of the committee is followed by a first list of useful plants which grow wild in Poland and are used in popular therapeutics and in the chemical-pharmaceutical industry or enter also into the herb trade. A second list deals with the laboratory plants which are grown in Poland. Each list gives separately the plants having the protection of the "National Council for the protection of nature", specifying their botanical characteristics, pharmaceutical terminology and the parts used. A third very interesting list gives the approximate quantity of each wild or cultivated plant gathered yearly.

(*Rivista Italiana delle Essenze, dei Profumi e delle piante officinali*, Milan, No. 10, 1932).

G. S.

## Tropical and Subtropical Agriculture.

MINERAL SUBSTANCES CONTENT OF THE PRINCIPAL VARIETIES OF BANANAS OF THE PHILIPPINE ISLANDS. — The banana forms an important part of the dietary of the inhabitants of the Philippine Islands; it is consequently of interest to ascertain its mineral content. The following twenty varieties have been analysed: Bungalan, Butuan, Dinalaga, Galatayan, Ginaring, Inamibal, Katali, Khai Pet, Lacatan, Latundan, Misi Luke, Morado, Ganga, Pitogo, Saba, Sabang, Ilaco, Tampohia, Ternate, Tiparot and Tundoe.

The results of the analyses were as follows :

- (a) The ash content of Philippine bananas varies from 0.74 to 1.27 per cent.
- (b) The varieties Pitogo, Butuan, Lacatan, Tiparot and Saba have a relatively high lime content.
- (c) The varieties Pitogo, Bungulan, Saba, Latundan and Ternate are relatively rich in ferric oxide.
- (d) The varieties Lacatan, Saba, Pitogo, Tiparot and Ternate are relatively rich in magnesium.
- (e) The varieties Saba, Lacatan, Latunden and Tiparot have a relatively high content in phosphoric anhydride.

(MARTINEZ Julian R. in the *Philippine Agriculturist*, Vol. XXI, N. 8, Laguna, January 1933).

CULTIVATION OF THE COCONUT IN ITALIAN SOMALIA. — According to Dr Lavinio BALDASSARI (*Rassegna Economica delle Colonie*, a. 20, n. 9-10, settembre-ottobre 1932) the cultivation of the coconut tree offers possibilities in many regions of Italian Somalia, where the shortage of rainfall can be compensated by suitable irrigation. An annual average of from 1500 to 1800 mm of rain is required for the satisfactory growth of the coconut tree. Multiplication trials are carried out on the Genale Experimental Farm. During the first six months of 1932 more than 100,000 coconuts were sown in nursery beds, and shortly after another 100,000 were also sown. The material was supplied partly by the Genale Station and partly by the Zanzibar Department of Agriculture.

In addition to the large tracts that can be planted in coconut after irrigation, reference should be made to all those tracts which are found along the Uebi Scebeli and the Juba River where it is possible to plant thousands and thousands of coconuts in existing conditions and with immense advantage to the economy of the Colony.

With the object of illustrating the importance of the cultivation of this palm which supplies so many utilisable products, including as the best known copra, coir, desiccated coconut, the writer quotes figures which it may be of interest to reproduce in the following Table :

TABLE I. — *Principal Coconut Cultivating Countries.*

Countries	Area under coconut cultivation ha.	Number of plants, millions	Number of nuts gathered, millions
Ceylon . . . . .	500,000	60	2,200
Philippine Is. and Federated Malay States . . . . .	450,000	50	1,800
South America . . . . .	430,000	45	1,500
Java and Sumatra . . . . .	280,000	26	1,200
Central America . . . . .	195,000	22	1,050
Pacific Is. . . . .	180,000	18	900
East Africa . . . . .	140,000	13	500
Siam and Cochin China . . . . .	80,000	7	350
West Indies . . . . .	60,000	5	200

J L.

CULTIVATION OF VIRGINIAN TOBACCO IN THE ARGENTINE REPUBLIC. — In view of the economic importance attaching to the cultivation of Virginian tobacco in consequence of the increase in the consumption of cigarettes of this type, a beginning is being made by the Tobacco Section of the Argentine Ministry of Agriculture and

some private organisations in the establishment of trials in experimental cultivation in the different tobacco zones of Argentina with a view to observation of the suitability of varieties of Virginian tobacco for acclimatisation.

Experiments undertaken for discovering the regions of the country best adapted to the growing of Virginian tobacco have shown that the whole mountainous zone of the Western area of the country is well suited, as is also the sandy-humiferous regions of the Chaco territory. In particular it is possible to secure complete acclimatisation of the Virginian varieties Hickory-prior and Harrison in the Lerma valley, province of Salta.

The season of the year best suited for sowing seems to be, in the Lerma valley, either the first or the second fortnight in October, so that the pricking out may be done during the first fortnight of December and the gathering in the second fortnight of March, the season when the atmospheric conditions, humidity and temperature, are most suitable for a satisfactory curing.

For the final planting out the following spacings are observed: 80 cm. between the rows and from 35 to 40 cm. between the plants.

The varieties of Virginian tobacco tried in the provinces of Salta and Tucuman are of North American origin, and correspond to the large-leaved type. The most widely grown variety is the Hickory-prior, with which is obtained in Argentina an average yield of 1,500 kg the hectare.

The variety Warne comes second, which has a less exuberant growth but on the other hand a very delicate aroma; unfortunately it is very liable to attacks of the regional disease known as " polvillo ". A third variety is also cultivated, the Harrison. This attains a considerable growth, the texture of the leaves is fine, the yield per hectare is low, but the tobacco obtained by artificial curing is mild and of very delicate aroma.

Chemical fertilisers are not much employed in Argentina as there is an abundance of rich virgin soil and the grower is constantly changing the position of the plantations. At the same time, for a sandy soil of average richness, it may be said that the following mixture is well adapted (quantity for one hectare):

Dried blood . . . . .	150 kg.
Phosphate of calcium . . . . .	400 "
Sulphate of potassium . . . . .	100 "

The dried blood contributes the nitrogen necessary for obtaining a good growth and the two other fertilisers take effect on the ripening and the coloration. Two crops of Virginian tobacco cannot be obtained in two consecutive years on the same plot, a rotation crop must be employed. The best kind of rotation is the following: leguminous crop, rye or oats, tobacco.

The gathering begins with the lower leaves, proceeding to the median leaves and so to the leaves of the crown of the plant.

Curing is effected in desiccators by the flue-curing method as follows:

*First Phase.* — The roof ventilator alone is left open, the operation begins at a temperature of 32° C., then the temperature is increased at rate of one degree C. per hour, up to 38° C., after that it is increased one degree in two hours only up to 42° C. Then one half of the lower ventilators are opened, and then the remainder by degrees till at the end of six hours they are in full activity, when the temperature has reached 45° C.

*Second Phase.* — The temperature is increased at the rate of 1° C. per hour, up to 70° C. At this point fixation of the colour is obtained: about 24 hours are necessary for this.

*Third Phase.* — Subsequently the lower ventilators and the roof ones are closed, and the temperature increases at the rate of two degrees per hour for 12 hours, until a temperature of 93 to 95 degrees is reached.

(VILLANEUVA Francisco Arigos, in *Bulletin* N. 878, published by the *Ministerio de Agricultura*, Direccion de Publicaciones, Biblioteca y Canje, Paseo Colon, 974, Buenos Aires).

**CULTIVATION OF THE PAPAYER TREE (*Carica Papaya*) AND PRODUCTION OF PAPAIN IN INDIA.** — Although the papayer tree is not an indigenous plant in India, it can be grown easily from seed in most parts of the country. The growth of the tree is rapid, and the fruit is borne within a year of planting, and is carried upon the trunk about the region of emergence of the leaves or branches. The size of the fruit varies considerably but when fully grown their weight ranges from 1 to 3 lb. A considerable income may be realised by careful cultivation of the plant for fruit, provided the plantation has been made in the neighbourhood of a large town. A still larger profit may be made however if a part of the juice of the fruit is extracted before the fruit is fully ripe and treated for the production of papain. This extraction lowers the market value of the fruit, but this loss is more than set off by the higher return obtained by the production of papain. By cutting the outer skin of the fruit before it is fully ripe, a white milky fluid exudes which may be collected and dried to a white non-crystalline powder. This material or papain powder contains a number of enzymes the most important of which is papain, which has largely the properties of pepsin, but which is active in an alkaline solution.

To obtain the most satisfactory yield, a plantation should be maintained with trees not more than four years old. The plant is grown from seed and the seedlings are reared in shallow trays. The young plants are first potted out and then transferred to prepared pits, two months after the sowing. In arranging the setting out of a plantation so that fruit bearing trees are maintained at a distance of 7 feet in every year after the fourth, the system of planting required is that a new tree is placed in each fifth pit each year. As there is considerable mortality among the young plants, it is best to place two seedlings in each pit and afterwards to keep the more suitable plant of the two. During the growth irrigation is required at intervals and especially before the ripening period of the fruits (March-April). Papain is produced most plentifully from the tree about October at the end of the rainy season.

Three varieties of papayer trees are grown in India: the Bombay, the Cawnpore and the Calcutta variety. The Bombay variety has been found to be the most productive of papain.

The extraction of the juice is effected by means of lancing, the cuts being made in a direct line from stem of the fruit to the opposite end. Experience shows that the number of cuts reduces the quantity of juice produced, but has no effect on the ultimate quality. The following table makes it clear that it is undesirable to make more than four cuts.

TABLE II. — *Effect of lancing on the yield and quantity of papain.*

Number of cuts per fruit . . . . .	4	8	10
Papain yield per fruit (grm.) . . . . .	2.8	1.1	1.33
Proteolytic activity per cent. of dried product	69.9	63.6	65.2

The lancing is best performed with a knife made of horn or ebonite, or stainless steel. The utilisation of iron or ordinary steel must be avoided as the juice becomes contaminated. The juice should be collected in earthenware or enamel dishes held

immediately below the fruit. The trees are visited every three months, in October, February, April and August. Each tree bears about 100 fruits annually, and a set of about 25 fruits are lanced each time until they cease to exude any further latex.

The juice is dried in the sun in a special simple apparatus. The sun-drier devised by the Technological Institute of Cawnpore gives good results.

(The Principal of the Harcourt Butler Technological Institute, Cawnpore. *Agriculture and Livestock in India*, Calcutta, September 1932, Vol. II. Part V.).

J. L.

## Agricultural Engineering.

**NEW TRUSS-FORMING SWEEP.** — For a number of years machinery builders have been endeavouring to mechanise more and more completely the various hay making operations, and various forms of combined rakes and swathe- or truss-formers have been devised.

One that has been very carefully developed and perfected is the "Tourbillon", which can be used for forming trusses of either green or dry forage. The machine picks up the windrow left by the mower, rolls the forage into a truss and releases it on to the raked ground. When the trusses are formed of green fodder they have then to be shocked in pairs to facilitate drying; in the case of dry fodder the trusses have only to be bound before removal.

The mechanism is worked from the shaft of the driving wheels by means of ordinary transporter chains. The apparatus consists of a raking cylinder which collects the forage and projects it on to an elevator resting on the wheels shaft and forming the frame of the machine. When the truss has reached the required size it is automatically released.

The machine worked satisfactorily in trials, the trusses were well rolled and kept their shape when released on to the ground.

The machine can be drawn by a single horse. Its weight is 500 kg and it works over a width of 80 cm, being able to clear three hectares in a day. The trusses fall on to the ground about 1.5 m. apart in the case of a first crop and 4 m. with a third crop; the weight of the truss varies from 3.5 to 4 kg.

(*Journal d'Agriculture Pratique*, Paris, 19 novembre 1932, 96<sup>e</sup> année, n<sup>o</sup> 47)

H. J. H.

**MACHINE PICKING OF COTTON IN THE UNITED STATES.** — The first patent for a cotton picking machine was taken in 1850. The improvement of machinery for the purpose has been slow, owing partly to the technical difficulty of manipulating the fibre but partly also to the growers' belief that cotton could not be satisfactorily picked by machine.

The Texas Experiment Station took up the question five years ago and has been studying the problem from the double aspects of the relative practicability of the existing types of machinery and the formation of a type of cotton better adapted to mechanical harvesting than the varieties grown at present.

The various machines patented for cotton picking may be divided into five types, namely:—

(1) *Picker type.* — This type includes machines which collect the cotton in the open bolls by means of prongs, tines or forks, at intervals through the season, without damaging the foliage and unopen bolls.

(2) *Thresher type.* — These machines cut through the stem near the ground and the whole plant passes into the machine, which separates the fibre from the rest.

(3) *Pneumatic harvester*. — The cotton is stripped from the bolls by suction or by a violent current of air.

(4) *Electric type*. — This type of picker is based on the attraction of the cotton fibre by an organ charged with static electricity.

(5) *Stripper type*. — The cotton is torn from the bolls by passing the plant through a comb or between rollers.

(H. P. SMITH, D. T. KILLOUGH, M. H. BYRON, D. SCOATES and D. L. JONES *Bulletin* No. 452 of the Texas Agricultural Experiment Station, College Station, Brazos County, Texas).

J. L.

## Animal Husbandry.

### General.

THE DISTRIBUTION OF BREEDS OF DOMESTIC ANIMALS IN URUGUAY. — In connexion with the World Agricultural Census organised by the International Institute of Agriculture, Uruguay undertook a census of domestic animals, dividing them according to breed. The results are of considerable interest. For *cattle* it appears that the number of pedigree animals has greatly increased of recent years. In fact, whereas in 1916 the purebred animals represented only 0.11 % of the total head of stock, in 1930 this percentage had reached 0.64. Amongst the purebred animals Hereford cattle predominate, numbering  $\frac{3}{4}$  of the purebred cattle of the country. Next comes the Durham or Shorthorn, then, third of the beef breeds and in much smaller numbers, comes the Polled Angus. The census includes also crossbred animals having the characteristics of different breeds. Here also the Herefords are in the first rank, representing 65 % of the total, while the Durham and Angus cattle represent respectively 28 % and 1 %. The distribution of these beef breeds within the country is approximately the same in all regions and in nearly every Department the Herefords are predominant.

*Dairy cattle* represent only 3.5 % of the total cattle, and only 1800 of them, that is not even 1 %, are registered. The predominating dairy breeds in Uruguay have always been and are to day the Friesian and Normandy cattle.

As regards *sheep*, the number of pedigree animals seems to be on the increase since the 1916 census and again since that of 1924. The proportion of registered animals, however, would seem lower, which is undoubtedly due to the enormous increase in the head of sheep since 1924. The percentage of purebred sheep remains small, being only 0.09 % out of a total of about 20 million sheep in the country. The distribution of the breeds (considering both purebred and crossbred animals having the characteristics of one breed or the other) shows a reduction in Merinos, the percentage of which has fallen from 38.03 % in 1916 to 19.77 % in 1930. The absolute number of Merinos has not however fallen very much. A reduction in the relative numbers is apparent also for Lincoln sheep. This breed in 1916 represented more than half the total flocks, whereas in 1930 it represented only 38.73 %. This breed has passed to second place in spite of an increase in its absolute numbers. In 1930 the first place was occupied by the Romney Marsh sheep, with 38.67 %. This breed in 1916 did not yet figure among those represented in Uruguay and in 1924 was only 20 % of the total sheep. The three breeds mentioned together constitute 97 % of the sheep and the remainder is divided between Shropshires, Corriedales and Criollas.

For *pigs* the census distinguishes between different breeds only for the registered animals. The returns show 1018 pedigree animals out of a total of over 300,000 pigs. This figure does not correspond to the number of animals registered by the Rural Association, which is only 485, but in both cases the largest numbers of pigs registered

belong to the Berkshire breed, which constitutes 90 % of the purebred pigs recorded by the census. The remainder is divided equally between the Yorkshire and Duroc Jersey breeds.

(Ministerio de Industria, Dirección de Agronomía, Sección de Economía y Estadística Agrícola -- Censo Agropecuario año 1930. 1ª Parte: Stock Ganadero. Montevideo, 1932).

S. T.

APPLICATION OF RESPIRATION TESTS TO THE DETERMINATION OF THE WORK CAPACITY OF ANIMALS AND TO THEIR SCIENTIFIC UTILISATION. — Dr. WERNER HUXDORFF, Chief of the Section of the Institute for Scientific Organisation of Work at Pommrits-Sa (Germany), gives an account (*Zuchtungskunde*, Göttingen, 1933, Nr. 1) of respiration tests which have been carried out on draught horses. An apparatus was devised for the experiments which is easy to use and can be worn during all agricultural work. This method does not determine the absolute amount of work done, but rather the coefficient of power and the fatigue of the animals. The method would seem as applicable to the scientific determination of a given amount of work as are the recognised systems in harness. The data published are not however adequate to allow of an appraisal of the value of these interesting tests.

E. M.

### Feeding.

NATURAL PHOSPHATES IN STOCK FEEDING. — M. H. VELU (Paris) publishes in the *Revue Vétérinaire* for November 1932 the results of some experiments carried out in the Laboratory of the Stock Breeding Service at Casablanca on feeding natural phosphates to sheep. These tests have shown the danger involved in using natural phosphates as a supplementary mineral ration. Prolonged administration of small quantities of natural phosphates (3 % of the grain ration over two years) to sheep resulted in complete decay of the teeth, serious affections of a general nature and death in rather more than two years. The writer concludes that phosphatic water consumed without intermission and, still worse, natural phosphates are thus capable of causing poisoning and death. They should therefore be entirely removed from the rations of domestic animals.

E. M.

ARTIFICIAL CURING OF LUCERNE AND THE CONTENT OF THE HAY IN NUTRITIVE ELEMENTS. — Three different methods of curing have been compared in America with regard to their effect on the food value of lucerne hay:— (1) completely artificial drying in desiccators, (2) partial natural drying on the field followed by artificial drying, (3) complete drying in the field. The digestion tests carried out with each of the three types of hay obtained showed that artificial curing has no adverse effect on the food value of lucerne hay. The results obtained in the tests of metabolism were, in fact, much the same in all three cases.

(*Journal of Agricultural Research*, Washington, 1932, No. 8).

S. T.

### Sheep.

A NEW TENDENCY IN SOUTH AFRICAN SHEEP FARMING: THE PRODUCTION OF LAMBS FOR SLAUGHTER. — A number of reasons are forcing sheep farmers in the Union of South Africa to introduce changes in their methods. It seems that the market for wool is choked and the prices are not high enough to make breeding a paying propo-

sition, so the sheep farmers are therefore endeavouring to make the sheep of the country better adapted for the production of lambs for slaughter. For this purpose a method of crossbreeding, called by M. R. LARTISIEN (in *L'Union Ovine*, Paris, November, 1932), crossing "en triangle" is being used. This consists of a first cross with rams of a dual purpose breed (Lincoln, Romney Marsh, etc.), then the first generation crossbreds are crossed with a mutton breed (Southdown, Dorset Horn, etc.). By this means quick growing lambs are procured which give a good quality meat as well as good wool. The writer foresees other economic consequences from this change; namely, a fall in the price of meat, a reduction in the numbers of sheep, resulting from earlier slaughter, a reduction in wool production and a rise in the price of wool. If this new tendency is followed in other sheep raising countries of the British Empire they will undoubtedly become large producers of lamb for the world markets

S. T.

**SHEEP RAISING IN MADAGASCAR** — The number of sheep in Madagascar is not high. The larger part of the 160,000 sheep appearing in the census returns are in the southern part of the island. The native sheep belongs to the Asiatic type of *Ovis Dolichura*. It is white, red or piebald red or black, often with only the head and neck black. The weight varies from 16 to 70 kg according to the region. In the south two lambs to a birth is usual. It has already been tried to improve the native breed by crossing with merinos, but the experiments have not been successful on account of the lack of cooperation between breeders and because the imported animals do not seem resistant to disease. Of recent years the official sheep raising station at Avamboche has been able to obtain crossbreds which are acclimatised and produce wool nearly equal to that of the imported animals. A certain progress may therefore be looked for in sheep raising in Madagascar, although the numbers will always be limited.

(*L'Union Ovine*, Paris, 1932, 4, 10, 11, 345, 384)

S. T.

#### Poultry.

**MARKING OF EGGS IN ITALY** — By Ministerial Decree of 15 January 1933, based on the Decree Law of 14 October 1932, concerning legislation for the commerce in eggs, regulations are established relating to the marking of eggs for importation into Italy. According to the Decree every egg must bear, in Latin characters of a minimum height of two millimetres, the name of the country of provenance. The inscription must be in indelible ink and must be easily legible. The sale of unmarked foreign eggs is forbidden within the kingdom and punishable by a fine. This Decree aims at protecting the home egg industry against foreign competition and ensuring the fresh condition of the eggs on the market.

(*Giornale degli Allevatori*, Anno XXVIII, n. 2, Roma, 1933)

S. T.

**FACTORS INFLUENCING ARTIFICIAL INCUBATION** — An interesting article by Mr Alexis L. ROMANOFF in the *Harper Adams Utility Poultry Journal* (Vol 18, No. 6) states that the chief factors influencing artificial incubation are temperature, purity of the air and humidity. These factors determine the length of the incubation period, the growth of the embryo, mortality of embryos and hatching.

The duration of incubation is determined mainly by temperature; the growth of the embryo by temperature, also by the quality of the air and to some extent by humidity. Mortality is affected by all three factors; impure air causes a high rate of mortality at the two critical periods, while temperature and humidity are effective more particularly at the second critical period. Hatching is determined by all the factors and particularly by those affecting the growth and mortality of the embryo.

J. L.



## Meat.

METHODS OF DETECTING ALTERATIONS IN MEAT. — It is difficult to detect putrefaction of meat because figures obtained in analyses of fresh meat vary so widely that they may approximate to those obtained in analysis of meat beginning to putrefy. The figures may even fall slightly after putrefaction begins, before rising again. These difficulties have led Dr. LABRANCA and F. POSTELLI to develop a new method of analysis, which is published in the *Annali d'Igiene* (Rome 1932, Vol. 42, n. 10). This method consists in the determination of the amino-acids of the soluble reducing substances and of the soluble nitrogen. It seems to give satisfactory results, but cannot be used for testing fish.

S. T.

## Agricultural Industries.

## Industries of Plant Products.

RECOVERY OF THE ALCOHOL LOST IN THE FERMENTATION GASES IN DISTILLING. — Preliminary tests carried out by P DEVOS with a view to recovering the whole of the alcohol lost in the fermentation gases by means of activated carbon have shown that 0.4 % of the alcohol produced in distillation of apples could be recovered in this way. (*La Cidrerie Française*, Paris, December 1932, No. 12).

G. S.

VALUE OF COTTON STEMS IN THE PAPER INDUSTRY — According to MM. VIDAL, BROU, ARIBERT, G. S. DAGAND and H. HEIM DE BALSAC the cotton stem gives a yield in cellulose of only 35 %, and this cellulose contains only 78 % of pure cellulose of the cotton type. In spite of the difficulty of eliminating the lignone the white pulps contain 89 % of comparatively pure cellulose, with about 8.5 % of lignone and 2.7 % of mineral matter.

A bleached pulp suitable for making fine quality papers may be obtained by a somewhat long alkaline treatment with lye of medium concentration. The shortness of the fibres however prevents the pulp having more than limited uses. The yield of white pulp is low; even counting the very low price of the raw material the returns are not very profitable.

The brown pulp, which is suitable only for packing papers, is of little value owing to the fibres being too short to give the paper the necessary strength.

The writers therefore have reached the conclusion that the value of cotton stems in paper manufacture has been exaggerated and that in reality they form a waste material which is of little use. They estimate, moreover, that a hectare of cotton would give an annual yield of 1200 to 1500 kg of paper pulp, that is, taking the yield of dry stems per hectare as 40 quintals and the yield of cellulose as 30 to 35 %.

(*Coton et Culture Cotonière*, Paris, avril 1932, fasc. 1).

J. L.

COMPETITION FOR THE PREPARATION OF NEW BEVERAGES IN ITALY. — The National Fascist Confederation of Farmers and the Confederations and Federations of Commerce and Industry have organised 3 national competitions with prizes for the preparation of agreeable thirst-quenching beverages, still or sparkling.

Competition 1. — For beverages with a basis of grape or lemon juice; the quantity of alcohol of fermentation contained must not exceed 4 % of the volume of the liquid.

*Competition 2.* — For beverages with a basis of wine, the accessory ingredients to consist exclusively of plant products (aromatic herbs, etc.) Beverages containing lemon juice are preferred.

*Competition 3* — Names for the products of competitions 1 and 2.

(*Rivista italiana delle Essenze, dei Profumi e delle Pianta officinali*, N. 1, 1933).

#### Industries of Livestock Products.

CONSIDERATIONS REGARDING PASTEURISATION — In *Le Lait* (1933, Nos 121, 122) C. PORCHER discusses the following points: (1) definition and purposes of pasteurisation, (2) time of pasteurisation; (3) pasteurisation appliances, (4) marketing in bottles; (5) obligatory pasteurisation

(1) To pasteurise milk is to destroy by the suitable use of heat nearly the whole of its normal bacterial flora and the whole of its pathogenic flora if — as is too often the case — such exists, without interfering to more than a minimum extent with the physical structure (constitution), chemical balance and biochemical elements (diastases and vitamins) of the milk

(2) The bactericidal action of heat on the milk is the essential part of pasteurisation. For scientific pasteurisation the following are necessary:—

(a) select the milk and collect it in large vats to ensure the uniform quality of the product.

(b) filter the milk to free it from impurities, visible and invisible;

(c) heat it to the given temperature and keep it at this temperature for the given time,

(d) cool it immediately to a much lower temperature,

(e) keep it at this temperature until it is put into the churns or, preferably, bottles,

(f) when transport is necessary to effect it at a low temperature

The careful management of milking and collecting also forms an essential part of pasteurisation. The ideal would be to pasteurise milk which has received special care from the beginning, from the selection of the cow with regard to its general healthy condition, the health of the udder in particular, to its stabling, feeding and milking

(3) The various methods of pasteurisation are tabulated.

(4) Marketing of pasteurised milk in bottles. In principle it may be said that bottling straight from the refrigerator is part of scientific pasteurisation. As regards technique there are two methods of delivering pasteurised milk in bottles: the filtered raw milk may be put into the bottles, then they may be sealed and pasteurised, or the milk may be previously pasteurised, cooled, then put into bottles and sealed by machinery. Delivery of pasteurised milk in bottles necessitates equipment for cleaning the bottles which has a large output per hour and yet ensures perfect cleanliness.

(5) The question of obligatory pasteurisation raises also the question of obligatory bottling. The problem would not be solved by enforcing pasteurisation without enforcing sale in bottles.

E. G.

CRITERIA AND METHODS FOR DETERMINING THE VALUE OF PASTEURISATION OF MILK. — In Nos. 121-122 of *Le Lait* (1933) H. STASSANO discusses the criteria which should inspire and methods that should be followed in evaluation of a process of pasteurising milk.

The writer subdivides these criteria and methods into three groups. The first group aims at the commercial preservation of the milk and its healthy condition, including flavour, percentage of coagulated albumen, duration of commercial preserva-

tion, number of bacteria, measurement of acidity, tests for *B. coli*, tests for hemolytic streptococci, testing of the disappearance of infection from milk naturally tuberculous. The second group relating to the examination of the milk itself includes physico-chemical and biological tests (viscosity, pH, soluble ferments, etc.), coagulation by pressure, separation of cream on standing, preservation of the carbon dioxide, volumetric analysis of the latter, testing of the acidity of the milk before and after heating, aeration of the milk, bactericidal power, immunisation power, vitamins, investigation of the products of certain bacteria at the temperatures of treating the milk when the treatment is of long duration. The third group relating to the economic aspect of the treatment examines the care of the apparatus, consumption of steam and water, facility of cleaning, bulkiness of the apparatus and costs.

From among these criteria, setting aside those of economic interest, the writer selects 11 which he regards as essential for a complete and impartial appraisal of the value of a pasteurising process or a simple pasteuriser, namely:—

- (1) Determination of flavour: no cooked flavour.
- (2) Determination of the percentage of soluble coagulated albumen: low proportion
- (3) Good keeping quality of the milk in sterile containers
- (4) Progress of acidification during heating: very slow up to 3-5 hours.
- (5) Disappearance of *B. coli*.
- (6) Disappearance of *B. mastitides* and all hemolytic streptococci.
- (7) Test of the healthy condition of milk naturally tainted with tuberculosis germs.
- (8) Conservation of the initial degree of acidity of the raw milk after pasteurisation.
- (9) Good conservation of the capacity of the milk to curdle under pressure.
- (10) Conservation of the capacity for a good separation of the cream on standing, and, further, a more rapid separation accompanied by a slightly thicker layer of cream
- (11) Conservation of the peroxylase: positive STORCH reaction

The writer desires perfect agreement between scientists and practical dairy workers in studying methods of appraising the value of pasteurising plant which shall both ensure hygienic milk and be practical.

E. G.

### Agricultural Training.

AGRICULTURAL INSTRUCTION IN CHINA. — The number dated 12 November 1932 of *« L'Europe nouvelle »* contains some very interesting information on Chinese Agriculture and the reorganisation of Education in China.

The essential character of Chinese social life is the predominant importance of the rural factor. The traveller is at once struck by the small size of the holdings and the intense subdivision of the cultivated area. The Chinese peasant devotes great attention to the fertilisation of his lands and his activities are characterised by a marked degree of skill and intense patience combined with a high appreciation of economic methods. Chinese agriculture is intensive in character in the sense that it makes the fullest possible use of human labour and effort. Its actual methods, poor equipment and ignorance of modern practice are however quite other than such as are required for intensive agriculture as generally understood to-day.

The reorganisation of Public Instruction in China forms the subject of a special report published in 1932 by the International Institute of Intellectual Cooperation. Education in China is still at a backward stage. Secondary education is possibly the

branch which is the greatest sufferer from a too hasty attempt at adaptation to western ideas. The technical schools and departments require to be increased and unless they can be made really efficient, the economic future of the country cannot be developed on the lines that it has a right to expect. At the same time there are some encouraging features. For example in the purely Chinese towns there are to be seen Agricultural and Sericultural Schools, which have been established at a very low cost and are under the management of students who have returned from France or America, in which boys and girls, on leaving the elementary schools, obtain a form of technical instruction which suffices to enable them, after the completion of the course, to introduce progressive ideas and improved methods of organisation into the provincial districts. These schools also serve a very useful purpose in the training of overseers and headmen for farm enterprises

G. R.

AGRICULTURAL INSTRUCTION IN EGYPT. — A special number of « *L'Europe Nouvelle* », published at the end of December 1932, is specially devoted to Egypt and contains a valuable account of the intellectual and scholastic life of the country in an article signed by ISSA HELMI PACHA, Minister of Public Instruction.

Egypt remains always a pre-eminently agricultural country and there was always a certain risk that the extension of education in the country districts might result in a migration to the towns. Hence the Ministry has been at special pains, in giving effect to its educational schemes to strengthen the attachment of the younger generation to the land.

Agricultural instruction is provided in the Intermediate Schools of Agriculture which provide a three-year course. Similarly the Intermediate Schools of Commerce give a three-year course but the students in the agricultural schools, before obtaining the diploma, are required to take a period of practical training on a farm. The work of the Higher School of Agriculture, in common with the Higher School of Veterinary Studies, is receiving special attention and the country reposes high hopes in the results that should be obtained by these two establishments.

G. R.

### Agricultural Research.

STATE EXPERIMENT STATION FOR AGRICULTURAL CHEMISTRY, AT VIENNA. — This station, founded in 1869 serves the whole of Austria, the annual income which in 1931 amounted to 222,000 schillings is in part contributed by the State and in part derived from the Station's own available funds. The lands used for experimental purposes include an experimental farm of 378 hectares and two stations for plant growth. The staff consists of 50 technicians and employees and the Director Ing. Scholz. In recent years, the principal activities of the station have been the following: soil science, research on soil nutrition requirements, fertiliser tests, fodder and feeding stuffs tests; growing of peat moss; study of medicinal plants preservation of fodder, ensilage, application and improvement of the Neubauer method. The station makes known the results of its researches by means of publications, exhibitions and conferences, it issues an annual report; in the last few years, it has published numerous scientific and practical works on medicinal plants.

D. K.

CENTRAL AGRICULTURAL STATION (ESTACÃO AGRÁRIA CENTRAL, BELEM). — This station, founded in September 1923 at Belem in the town of Lisbon, serves the following three regions: Terra Saloia, Outra Banda, Arrabida, and the work undertaken is mainly experimental. Its income for the economic year 1932 was \$ 863,092; it

receives no subsidy. The area of the experimental fields at Belem is about 35 hectares consisting of clay land originating from the disintegration of basalts. The staff of the station is grouped in 6 divisions under the direction of M. MARIO DE AZEVEDO GOMES and comprises 84 persons. The most modern material is used and the station is therefore in a position to fulfil its purpose of scientific research.

*Principal work carried out in the different divisions of the Agricultural Station.*

*First Division : Physiographical studies.*

Investigation of the viticultural region of Coláres and construction of the corresponding agro-hydrological map.

Investigation of the region of Serra Grande de Serpa and construction of the corresponding agro-hydrological map.

Agrological study of the texture and value of fertilizers on different soils.

Agricultural ecological studies relating to the different varieties of wheat.

*Second division : Economic studies.*

Investigations of farming systems.

Investigations of the economic conditions of wheat-growing.

Contribution to the study of the economic situation of Portuguese agriculture

Agricultural economic study of the viticultural region of Coláres;

*Third division : Laboratory studies.*

Study of the characters of certain Portuguese brandies.

Study of home grown wheats and wheat flours from the point of view of composition and breadmaking qualities.

Study of the methods of applying benzoic acid as a conserving agent for Portuguese wines.

*Fourth division . Experiments on seeds and improvement of crop plants.*

Intensification of the comparative trials made in the various parts of the country, in collaboration with the institutions existing in each.

Detailed study of the ancestry of hybrid wheats created from 1928 to 1931.

Projects for the commercial classification of national wheats. Studies in selection and improvement viewed from the physiological, cytological and histological standpoints; experiments in sowing and disinfection.

Organisation of registers of the introduction of foreign seed for cultivation.

*Fifth division : Cultivation studies.*

Study of the different varieties of rice imported from Italy ; studies of sowing and transplanting.

Studies of artificial meadows , intercalary and catch crops, rotations and fallows, methods of sowing of wheat, haymaking; experiments with various agricultural materials;

*Sixth division : livestock studies.*

The Station possesses a livestock museum and carries out experiments in commercial hybridization.

Aviculture: the Station is endeavouring to establish a national breed of all-round suitability.

The giving of publicity to the results of these investigations amongst agriculturists and the distribution of selected seeds are methodically organized, as a result of the *Regulamento para aprovação de cereais para sementeiras produzidas pelos agricultores sob garantia oficial.*

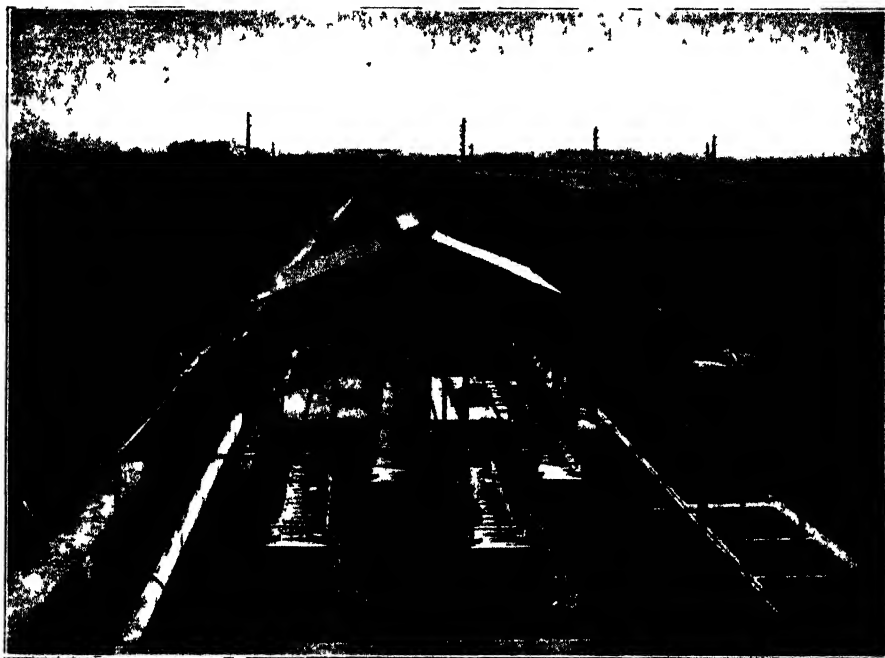


FIG 1 — State Experiment Station for Agricultural Chemistry of Vienna Field Station of Koinenburg



FIG 2 — Central Agricultural Station of Belem (Portugal) Various crop experiments

The Central Agricultural Station of Belem publishes the reports of its proceedings through the Publicity and Propaganda Service of the Department of Agricultural Social Affairs. The publications of this bureau consist of three series, dealing respectively with general policy (quarterly) legislation (half yearly) and agricultural information propaganda (monthly). (see Figure 2).

**FEDERAL INSTITUTE OF AGRICULTURAL EXPERIMENTATION OF OERLIKON, ZURICH.** — This Institute, founded in 1920 by the fusion of two older establishments serves German and Italian Switzerland; it is maintained by the State; its budget for 1931 amounted to 412,800 Swiss francs. The Institute possesses five experimental fields: at Oerlikon 310 ares of marley sand; at Brüttisellen: 194 ares of peat land; at Kloten 220 ares of stony marl; at Einsiedeln 10 ares of heavy marl; at Arosa 40 ares of sandy marl. The



FIG. 3. — Federal Institute of Agricultural Experimentation of Oerlikon, Zurich (Switzerland).

staff includes the director, M. F. T. WALKEN, and a staff of 50, of whom 13 are technicians. The principal activities of the Institute are inspection of products utilized in agriculture (seeds, fodder, etc), plant protection and miscellaneous research; in 1930 the station made 51 manurial experiments, 131 varietal experiments, 44 feeding stuffs experiments and 16 experiments relating to plant protection; it makes the results of its investigations known through its publication, through lectures and by educational courses; its annual report is published in the *Annuaire Agricole de la Suisse*. (See Figure 3).

D. K.

### Forestry.

**SAWMILL WASTE AND ITS UTILISATION IN SCANDINAVIA AND AMERICA.** — In order to give a comparison of the percentage of mill waste and the extent of its utilisation in Oregon and Washington on the one hand and in British Columbia, Sweden and Finland on the other, ELTON LODEWICH has published in the *Journal of Forestry* (Washington

1932, No. 7) a special study with statistical tables, based on data collected between 1926 and 1929, a period not affected by the present abnormal conditions of financial crisis.

The volume of wood converted into sawdust is equivalent to 10 % for Sweden, 13.7 % for the Douglas Fir region of Oregon and Washington and 17.2 % for British Columbia. The percentage converted into slabs, trimmings and edgings is highest in Sweden and Finland, intermediate in Oregon and Washington and lowest in British Columbia. The higher yield of slabs, etc. in Sweden and Finland is possibly due to the fact that smaller logs and a higher proportion of top logs were utilised.

The percentage yield of sawing timber is lowest in the European countries and highest in British Columbia with Oregon and Washington occupying the middle position. The lower yields in the Scandinavian countries may well be due to the relative smallness of the logs and the high proportion of top logs.

As regards the utilisation of sawdust, on the assumption that in British Columbia the same percentage of the log was used for mill fuel as in Oregon and Washington, 11.7 % of the total log volume was deducted from the slabwood and sawdust not reported as utilised. The remainder was then considered as non-utilised waste and classified as destroyed in the refuse burner.

In Oregon and Washington the percentage of the log volume converted into "small timber" is lower than in the other Countries considered and only 1 % of the total is manufactured into lathes, handles and shingling. Finland on the other hand utilised 4.4 % of its log volume in this way and Sweden and British Columbia 3 %. In British Columbia snow fencing and car doors are made from slabwood.

There is little difference as to the percentage of logs converted into paper chips between Oregon, Washington, British Columbia and Finland for which the percentage ranges from 2 to 4. In Sweden however the percentage is as high as 18 %.

The amount of sawmill waste used as fuel depends on the nearness of the mills to centres of population. Thus the amount of fuel wood produced in Oregon and Washington is 8 % higher than in British Columbia and fuel wood is produced on a much higher scale from saw mill waste in Finland than in any of the other countries cited.

The conclusions of this comparative study of American and Scandinavian conditions may be thus stated: (1) between 3 and 4 times less material is utilised in America than in the European countries; (2) further and perhaps more profitable use of Oregon and Washington slabwood could be made by conversion into short length and small sized timber stock; (3) the production of raw material for paper pulp manufacture with sawmill waste requires further development.

R. W.

## BOOK NOTICE

ZANDER DI. ROBERT. Handwörterbuch der Pflanzennamen und ihre Erklärungen, 2nd edition, Berlin 1932, Gärtnersche Verlagsgesellschaft.

[The issue of a second edition of this handbook explaining the origins of plant names shows that it serves a practical purpose. The work has been amplified and brought up to date with the collaboration of a number of botanical, horticultural and linguistic experts and takes into account the latest scientific discoveries and the resolutions of the recent International Congress at Paris (May-June 1932). The material is arranged in a clear and practical manner. Historical and etymological notes accompany the plant names].

N. G.



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(1) Previous list December 1932. To be continued June 1933.

(2) List of abbreviations: bihebd. (biweekly); bimens. (twice monthly); bimestr. (every two months); étr. (foreign price); hebd. (weekly); int. (home price); irr. (irregular); mens. (monthly); N. S. (new series); q. (daily); sem. (half yearly); s. (series); v. (volume); trim. (quarterly).

(3) Between brackets [/] are given translations and explanatory notes not appearing in the title of the review.

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# MONTHLY BULLETIN

## OF

# AGRICULTURAL SCIENCE AND PRACTICE

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### EDITORIAL

#### **The Good Bread of Former Times.**

There is a tendency at the present moment to return to the old classical method of making bread with sour dough. This backward step is justifiable because practically everywhere, but more especially in the large towns, the necessity for speed has led to the use of excessively large quantities of yeast.

The fermentation produced by yeast in the dough is rapid, but the resulting bread is insipid and rapidly becomes stale. The latter is a drawback now that the economic crisis has reduced the consumption of new bread. This explains the success that has crowned certain recent experiments in large-scale baking with sour dough and putting the bread on the market in hygienic wrappings.

It is curious thus to see a return to a method of baking regarded, though wrongly, as primitive. But, economic phenomena being so complex and their results sometimes unexpected, it may be wondered what will be the reactions of the use of sour doughs on the baking yeast industry and on the utilisation in yeast using bakeries of a considerable quantity of molasses as raw material for producing the musts.

Prof. GEORGES RAY.

### ORIGINAL ARTICLES

#### **Experimental Tobacco Growing Stations under the Administration of the Tobacco Monopoly of Turkey.**

Tobacco growing in Turkey is first alluded to in the 17th century in an ordinance of Sultan Suleïman II. After that time it spread rapidly and now the best of the oriental cigarette tobaccos come from Turkey. The soils and climate of the country are suited to the production of good tobaccos, since Turkey now supplies 40 to 50 million quintals annually, the greater part of which is exported all over the world.

Four main tobacco producing regions may be distinguished in Turkey, namely, the Smyrna zone, the Black Sea zone, the Anatolia zone and the Southern Anatolia zone. These four zones produce tobaccos of very varying types, whether they are of the older varieties (Basma and Bachi-bagli) or of those imported recently which have given rise to the large plantations of Gueïve-Akhissar, Kara Mersel, Karchi Yaka, Izmidt, etc.

With a view to improving the yield of the crop which is a natural source of so much wealth to the country the Government has replaced the old private tobacco company existing before the Republic by a State Monopoly, which undertakes the development of tobacco growing and the promotion of the export trade. Thus the tobacco monopoly formed 6 years ago a technical research service which studies the varieties grown in Turkey, their improvement by selection and the control of diseases and pests. The headquarters and laboratories of the service are at Istanbul ; its programme of activities is as follows :

- 1) Systematic study of the varieties existing in Turkey from botanical, morphological and industrial standpoints, and their relations with the soil and climate.
- 2) Selection and improvement of the existing varieties.
- 3) Introduction of new varieties and study of the districts suited to their cultivation.
- 4) Soils, manures, rotation systems, cultural treatments.
- 5) Processes of curing and fermentation.
- 6) Control of pests and diseases of the crop in the field.
- 7) Control of the pests and diseases of the tobacco after picking.

In order to carry out this programme effectively it became necessary for the Service to have at least one experiment station and experimental plantations distributed in all the tobacco producing regions of Turkey. The Experiment Station was opened in December 1927 at Maltépé in the outskirts of Istanbul, and 14 km. from Haydar Pacha at the head of the Baghdad railway. Later a further Station was found necessary and was formed by the Scientific Agricultural Section of the Tobacco Monopoly at Samsun in February 1931. Experimental plantations were formed at Smyrna, Akhissar, Kara Mursel and the other producing regions.

#### Maltépé Experiment Station.

The trial fields of the Station are situated 700 metres from the sea and at an altitude of 8 metres above sea level. The climate is approximately that of Istanbul, with a mean annual rainfall of 700 mm. The Station serves the basins of the Sea of Marmara and the Black Sea and Thrace. The average annual budget of the Station has been about 15,000 Turkish pounds (18,000 French francs); it is supported by the State Tobacco Monopoly. The acreage of the experimental land is 5 hectares ; the soil is Lower Devonian sandy-clay. The Station staff consists of a specialist in genetics, three assistants and a farm manager. The geneticist has the title of Technical Advisor to the Monopoly ; he receives a salary of 650 Turkish pounds a month, his assistants 75 pounds each and the manager 90 pounds. The temporary staff varies in number according to the season ; in 1931 the months in which most labour was required were : February, 473 day labourers ; August, 822 ; September, 976. It may be reckoned that from the end of March to October the work of the Station requires 3265 days' work, and from October to the end of March only 1646, making about 5000 in all, of which 1865 days are female labour. The equipment of the establishment includes all that is necessary for cultivation, selection and preparation of tobacco (glasshouses, nursery beds, microscopes, curing ovens, farm equip-



FIG. 1. — Maltépé Station: Bagged flowers of the tobacco plants to be kept for seed.

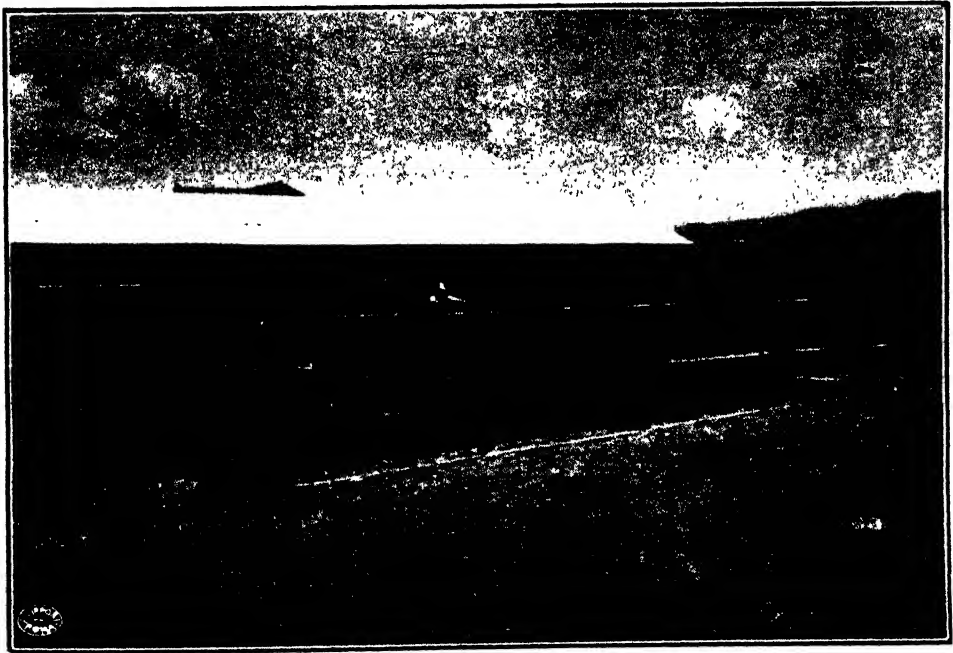


FIG. 2. — Maltépé Station: Tobacco curing (system used in the Black Sea basin).



ment, etc.). The plan of work at present being followed is the systematic study of the varieties of tobacco grown in Turkey with regard to their botanic, morphological and industrial characteristics and relationships with soil and climate; selection and improvement of varieties, study of new varieties, control of diseases and pests of tobacco in the field and after picking, and study of processes for curing and fermentation. Recently the Station has been more particularly concerned in establishing a type suitable for each tobacco growing region, improving them by selection and increasing yields, also in studying fermentation and control methods against pests (*Lasioderma serricorne*) and diseases (root rot, etc.). The Station distributes selected and semi-selected seed to growers, together with leaflets describing scientific methods of culture and disease control, and also organises campaigns for the control of diseases affecting the various regions.

#### Samsun Experiment Station.

Situated near the town of Samsun by the southern shore of the Black Sea, 450 m. inland and 25 m. above sea level. This Station may be regarded as a sub-station of Maltépé and was formed with a view to improving the tobaccos of the Black Sea basin which have certain special characteristics and requirements. The Samsun region has an annual rainfall of about 663 mm with 140 rainy days; the mean annual temperature is 14.3° (mean maximum 17.9°, mean minimum 10.2°); the dominant wind is from the south-west and there are about 104 cloudy days in addition to the days of rain. The Station's expenditure is 8100 Turkish pounds (97,200 French francs) which is entirely supplied by the State Tobacco Monopoly which controls the Station through its Scientific Section. The land of the region belongs to the secondary geological formation though the Station is situated on a trachytic outcrop with clay soils. The Station's land is 2 ¼ hectares in extent and is managed by an assistant of the geneticist; there are also a tobacco expert, a visiting inspector of the genetical work and a director of the practical cultivation work. The number of day labourers varies (in winter 800 days' work, in summer 1600). The general scheme of work followed now consists in establishing the different types of the region, improving them by selection, increasing their quantitative and qualitative yield and bulking the selected seed. The Station having been recently formed has not yet published much; its results are made known to growers by field talks and articles in the local newspapers.

Until 1928 the Turkish Tobacco Monopoly published a "Revue Technique Agricole du Monopole des Tabacs de Turquie". The Maltépé Station intends shortly to start issuing an annual report.

D. KALTENBACH.

#### Drainage Cisterns.

In arid land where the search for water has not proved successful it is proposed by M. PUCCI (1) to construct a new type of cistern, which he calls a "drainage cistern". The cost of installing cisterns of this type is less than that of the usual tanks for utilising rain water, or "gutter cisterns".

(1) *Giornale di Agricoltura della Domenica*, Piacenza 1932, No. 48.

The new type of cistern allows of the quick accumulation of large quantities of clear drinkable water while at the same time draining the land.

M. Pucci has built one of these cisterns with a capacity of about 720 hectolitres on a 9 hectare estate. The cistern is built of brick, but the bricks are not

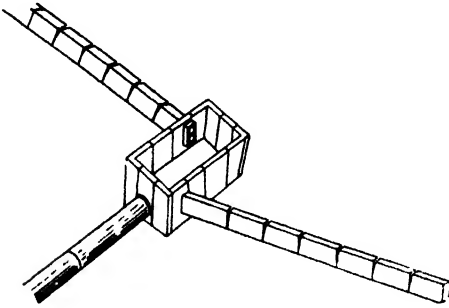


FIG 1 — Drains and small reservoir serving to direct the drainage waters into the cistern (by the cement pipe seen to the left of the figure).

closely in contact with each other in order to prevent the pressure of the water causing cracks in the vaulting. The water is first collected, by means of drainage pipes, into a small receptable (Fig. 1) and then passes through a cement pipe (15

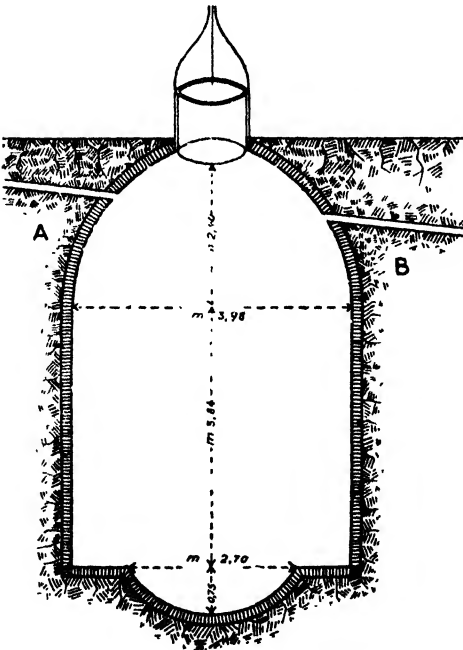


FIG 2 — Vertical section of the cistern.

A Inflow pipe.

B Overflow pipe.

The bottom of the cistern is hollowed out to form a depression.

to 20 cm in diameter) into the cistern (Fig. 2), at the bottom of which is a depression for sedimentation.

The total cost was less than 2000 Italian liras, the construction requiring nearly 15 days with 4 workmen per day.

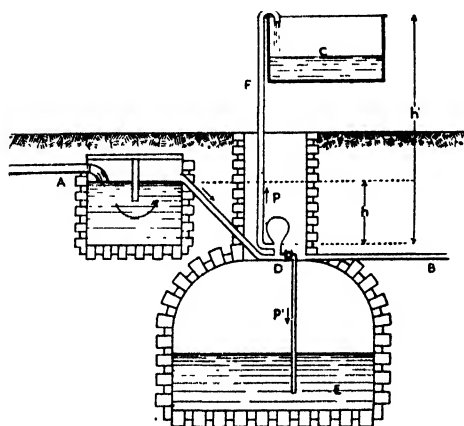
In a single night of rain in October the cistern was completely filled, although only a small part of the land was drained.

M. Pucci observed also that even a light, summer rain is sufficient to raise considerably the level of the water in the cistern. The water is clear, and drinkable.

The possibility of having available by this means water at a higher or lower temperature than that of the atmosphere, according to the season, is of great value in summer, and in winter allows of irrigation at temperatures above those of the surroundings.

A ram (Fig. 3-D) will also in suitable conditions make it possible automatically to raise to the reservoir C a certain quantity of water for use on the farm.

Taking into account however the small amount of water raised according to the formula  $P = 0.258 P' \frac{h'}{h} \sqrt{12.80 - \frac{h}{h'}}$  and the size the overflow receptacle must be, in order to obtain a greater flow of water into A, it is possible to use



A = Inflow.

B = Overflow.

C = Upper reservoir.

D = Ram.

P = Water pumped to reservoir C.

P' = Water running into cistern E

h = Distance water falls

h' = Distance water raised.

an ordinary rustless iron injector fitted to the inflow or outflow pipes so as to cause a vacuum in the pipe P' and facilitate the upward flow of the water. A windmill or some other means of raising the water by causing a vacuum in the pipe P' may be used to complete the system of collecting the drainage water.

On land with a decided slope the overflow pipe B may serve directly for filling other reservoirs.

In the vast more or less arid zones which are low-lying and far from natural outlets (Spain, Central Africa, etc.) drainage of the land, even if effected only by mole-ploughs, and introduction of the drainage cistern connected to reservoirs, artificial pools, filtering tunnels, etc. (M. BELLINCIONI, at the Vth National Water Congress, Italy 1932) would make development of the land and intensive farming possible.

The collection of the waters into a large artificial lake at the lowest point of the low-lying zone would greatly increase the moisture of the atmosphere as well as of the crops and would in certain cases make it possible to utilise the differ-

ence in level between the surrounding reservoirs and the lake (the level of which would be lowered by evaporation) for the production of power. It is certain that in arid zones, often very hot, having a slight annual rainfall, constituted generally of torrential spring rains, the regulation and collection of the waters into closed reservoirs of the type of these drainage cisterns would seem from many points of view the best method. There would be the further possibility of raising the water automatically to the level of the arable layer and using the overflow pipes, made of porous material or with loose joints, for subterranean irrigation.

In land with a high content in salt, upward displacement by capillarity of the salt-rich water-carrying stratum, resulting from evaporation during the hot season, would be reduced and in certain cases checked altogether, while the enclosing of the water in the drainage cisterns would allow of sweetening by one of the usual methods, or the first waters, having the highest salt content, could be directed into the main centre while the purer water could be collected in the drainage cisterns for use on the farm and for irrigation.

This could undoubtedly contribute to a more completely satisfactory solution of the difficult problem of the reclamation and improvement of arid salt lands without the necessity of limiting cultivation to the special salt-resistant crops, or the use of treatments with gypsum, lime, sulphur, zeolites, etc. which are costly and not always entirely successful.

G. STAMPA.

### **Is the Sale of Non-Bottled Milk a Danger to Public Health?**

Much attention has been paid of recent years to the problem of the town milk supply, to the complicated methods of collection, transport and distribution and to the quality of the milk on the market. In the countries most advanced in these matters the question of raw or pasteurised milk is connected with an equally important question, namely, its sale "loose" or in bottles.

The question whether towns should be supplied with raw or pasteurised milk has been settled nearly everywhere in the same way. It is agreed that it is better to have a safe pasteurised milk than a raw milk which in spite of all possible precautions remains a danger. The efforts of milk producers to eliminate tuberculosis, contagious abortion and mastitis from the dairy herds have in fact contributed largely to the production of pure milk, but these measures are no safeguard against infectious diseases spread by milk, such as typhoid fever, scarlet fever and diphtheria. The only practical method so far found of avoiding these risks without increasing too greatly the price of milk is pasteurisation.

Pasteurisation does not make bad milk good, does not make unclean milk pure, but it makes of a clean milk a safe milk. Pasteurisation, when properly carried out, does not change the flavour, odour or appearance of the milk or prevent the separation of the cream, nor does it alter appreciably the chemical constituents, the digestibility, nor the food value. But all the efforts to produce safe milk are valueless if later exposure to infection is not avoided. Such secondary infection may not infrequently be brought home to the retail dairy in which the milk is usually exposed to the air, poured into pans, sometimes imperfectly washed, etc. In a word, there should be a general ban on the sale of loose milk.

In a Report of the Milk Commission of the Health Department of New York City (1) the question is discussed in detail and the reasons given why the sale of milk not in bottles should be prohibited.

The Commission set out to answer the question whether in present conditions loose milk is a health hazard and if so what measures should be taken to eliminate the hazard. The Commission does not deny that there is evidence of risk of contamination which can be avoided only by suppressing the present usual method of retail sale; it is of the opinion that even improved sanitary measures could not completely eliminate all risk from the sale of loose milk.

The Commission reached these conclusions as a result of a very thorough investigation of the loose milk on the market, studying its quality as regards food value and hygiene.

The opportunities for the removal of cream and the addition of water are greater in the case of loose milk than in the case of bottled milk. It is a simple matter to remove a quart of cream from a 40 quart can of milk and substitute a quart of water without detection. It is not easy to do this if the 40 quarts of milk are contained in 40 one-quart bottles, each capped by machine. Both the removal of cream and the addition of water represent health hazards, since the former reduces the nutritive value of the milk, and adulteration, being clandestine, is apt to be done in a way which may contaminate the milk with pathogenic organisms.

The facts relating to the comparative butter-fat content of bottled and loose milk brought out in the laboratory studies made for the Commission are of interest. A much wider variation was found in the fat content of loose than of Grade B bottled milk. Only one out of 100 samples of bottled milk fell below the minimum standard for fat defined in the Sanitary Code, whereas 26 out of 209 samples (12.4%) of loose milk were sub-standard. The comparative butter-fat content of bottled and loose milk are shown more in detail in Table I.

TABLE I.

Percentage of Fat	No. of Samples		Per Cent of Samples	
	Bottled	Loose	Bottled	Loose
Under 3 . . . . .	1	26	1.0	12.4
3.0 to 3.4 . . . . .	5	44	5.0	22.1
3.5 . . . . .	12	31	12.0	14.8
3.6 . . . . .	20	32	20.0	15.3
3.7 to 4 . . . . .	53	66	53.0	31.6
Over 4 . . . . .	9	10	9.0	4.8
Total . . .	100	209	100.0	100.0

(1) *Is loose milk a health hazard?* - Report of the Milk Commission, Health Department, New York City, 1931, 250 pp.

This evidence supports a fact that is commonly known, namely, that the fat is not evenly distributed in loose milk as it is dispensed at retail shops and restaurants. However, if it were merely a question of uneven distribution of the fat in the various samples it would naturally be expected that a proportional number of the samples would show a high fat content. As a matter of fact, the percentage of loose milk samples having over 4 % fat was found to be smaller than with bottled milk. Evidently the average fat content of loose milk is somewhat lower.

A comparison of loose milk with Grade B bottled milk as to their content in total solids showed that only one out of 100 samples of bottled milk was sub-standard in this respect, whereas 39 out of 209 samples of loose milk were deficient in total solids. The following table shows in greater detail the variation in total solids.

TABLE II.

Per Cent. of. Total Solids	No. of Samples		Per Cent of Samples	
	Bottled	Loose	Bottled	Loose
Less than 11.5 . . . . .	1	39	1.0	18.7
11.5 and 11.6 . . . . .	6	17	6.0	8.1
11.7 to 12.3 . . . . .	77	137	77.0	65.6
More than 12.3 . . . . .	16	16	16.0	7.6
Total . . . . .	100	209	100.0	100.0

The results of bacteriological analysis of retailed loose milk are not less unsatisfactory. A determination of the number of bacteria in samples of milk gives valuable information regarding its sanitary quality. The legal limit set by the Sanitary Code for Grade B milk is 50,000 bacteria per c. c. Table III shows the bacteria counts from samples of loose milk taken at different types of retail establishments.

The bacteria counts shown in Table III show that approximately 40 % of the samples exceeded the legal limit. Even if one applies the legal standard in force in 1928, namely, 100,000 bacteria per c. c., almost 30 % show counts in excess of that limit. The bacteriological examinations show besides higher bacteria counts a greater number of colon bacilli in loose milk as sold in the shops than in Grade B bottled milk, though they do not permit any definite conclusions as to the source of the increased number of bacteria. The danger from this milk will undoubtedly depend upon the sanitary condition of the premises where the milk is sold and on the personal hygiene of the individuals employed.

A fundamental principle of milk sanitation was stated by the Milk Commission as follows: milk should be protected as far as practicable by proper production methods at the farms. Excepting at the high expense necessarily incurred in the production of "certified" milk, no practicable system of inspection or other

TABLE III.

	Grocery Stores	Delicates- sen Stores	Dairy Stores	Bakeries	All Groups
Number of samples . . . . .	473	132	300	95	1000
Per cent of samples showing bacteria counts per c.c. of:					
10,000 to 30,000 . . . . .	15.9	22.7	27.3	26.3	21.2
11,000 to 30,000 . . . . .	24.9	25.8	28.4	27.4	26.3
31,000 to 50,000 . . . . .	14.0	15.9	10.3	12.6	13.0
51,000 to 100,000 . . . . .	9.1	9.8	10.0	15.8	10.1
More than 100,000 . . . . .	30.1	25.8	24.0	17.9	29.4
Total . . . . .	100.0	100.0	100.0	100.0	100.0

control can prevent occasional contact with the milk or utensils on the part of cows or persons affected with disease or carrier conditions. Therefore all market milk should be protected by the additional safeguard of pasteurisation, and thereafter kept in closed containers which are not opened until they reach the place at which the milk is to be consumed. This principle may be said to be almost axiomatic, yet it is being violated in the case of more than a million quarts of milk sold daily in bulk form in New York City.

Since this milk is subjected to pasteurisation in order to neutralise any possible contamination it may have received, the folly of re-exposing it later to chances of contamination from thousands of homes and shops should be self evident.

In résumé, it may be said, that the opportunities for removal of cream and addition of water are greater in the case of loose than of bottled milk. The distribution of loose milk by dipping from cans results in many customers receiving milk which is sub-standard in butter-fat and therefore of lower food value, even though there has been no deliberate adulteration of the milk. This is because the dipping method tends to give the first customers a disproportionate amount of the cream. The system also results in many customers receiving milk which is sub-standard in total solids, as well as the fact that dipping exposes the milk to possible contamination.

In the face of such striking conclusions the necessity of banning the sale of loose milk cannot be denied, at any rate in large towns in which the complicated systems of collecting, transporting and distributing the milk expose it perpetually to risk of contamination. Pasteurisation even will not give the desired results if care is not taken to preserve the milk afterwards from chances of infection.

It is chiefly the economic side of this problem, the increased price of milk in bottles as compared with loose milk, which often prevents the authorities in large towns from taking measures to prohibit the sale of non bottled milk, though such milk is undoubtedly a danger to public health.

E. GASSER.

**Present Situation of the Management of Private Forests in Europe. (Concluded) (1).**

*Hungary.* — The total area of the forests belonging to private owners is 537,750 hectares, an area representing 45.8 % of the forest area of the country and 5.77 % of the total area. If there are also included the forests belonging to the Church, private foundations, trustees, joint owners and institutions, i. e., forests of a strictly private character but which are all subject to the State system or compulsorily managed by forestry experts in accordance with approved plans, the forest area is 1,028,103 hectares, and the respective percentages 87.55 and 11.03.

Law XXXI of 1879, which is still in force, gives protection to privately owned forests only when situated "on soils favourable to the growing of forests" and on loose sandy lands. In such cases, while the law forbids clearing and destruction, including the removal of stumps and roots, it also prescribes compulsory reforestation after felling and limits use for pasture; it however contains no special provisions regarding the management of forests situated on soils suitable for other forms of cultivation. Hence owners of these forests, if they find land suitable for some form of agriculture, are at liberty to work it or even to clear it according to their fancy.

Later, with changed conditions these provisions proved no longer satisfactory. Two Government Decrees, still in force to-day, introduced far-reaching changes and the forests were no longer classified in accordance with the nature of the soil. Decree No. 3296 M. E., of 1918, compels all forests owners following no approved plan to request the competent authorities to grant permission to carry out fellings whenever it is their intention to cut such quantity of timber as is in excess of a certain minimum required for their own personal requirements. Decree No. 6201 M. E. of 1918 supplements this measure by forbidding the clearing and the sub-division of forests without authority.

Law XXXI of 1879 also draws a distinction between protection forests, which are without exception managed by experts in forestry in accordance with plans of management approved by the Ministry.

All the various regulations now in force make adequate provision for the preservation of privately owned forests and give satisfactory protection against subdivision and misuse.

The chief practical difficulty appears to be that the regulations are not identical for all the forests of this class, which makes proper control a somewhat difficult matter and increases the work of the State Forestry Administration. However this difficulty has become much less serious inasmuch as the number of private individuals who willingly agree to work their forests on lines approved by the Government is constantly on the increase. The owners are the more ready to accept this arrangement as they are thus freed from the obligation to request permission whenever they desire to make fellings in their forests. There are also certain provisions making it obligatory to afforest waste lands.

(1) For first part see *Bulletin*, March 1933, pp. 120-129.



In addition, the law of 1923 compels all owners who possess lands on the Great Plain of Hungary, the region which is poorest in forests in all Hungary, to establish on their property new forests, clumps or rows of trees, with the partial assistance of the State.

*Irish Free State.* — The total extent of forests in the Irish Free State belonging to private individuals amounts to 84,432 hectares, which corresponds to 78.9 % of the whole afforested area and to 1.3 % of the total area of the country.

It is forbidden to clear the land or to uproot trees without previous permission and felled trees must be replaced by planting. In order to facilitate general supervision, saw mills and other establishments concerned with the timber trade are bound to supply the Ministry on request with all information required on the origin, volume and kind of wood that they treat in their mills or utilize otherwise. Similarly exporters are bound to furnish similar information on the timber intended for export.

The laws of 1919 and of 1928 are intended to encourage private owners to carry out afforestation work and the State makes grants-in-aid for this purpose.

*Italy.* — The forests belonging to private owners have a total area of 3,535,000 hectares, that is 65 % of the Italian forests or 11.4 % of the whole area of Italy.

The importance of the preservation of these forests, as explained by the orographic conditions of the areas in which they are to be found, is considerably higher than their extent would seem to suggest.

Forest legislation in the past was largely influenced by the theory of individual liberty (law No. 3917 of 20 June 1877) and was thus unfavourable to the maintenance of privately owned forests which have shown a constant decline. Law No. 277 of 2 June 1910 is the first which contains any really appreciable provisions whereby the State gives specific encouragement to private owners to undertake re-afforestation schemes.

Fascist Forestry Legislation introduced fundamental reforms into the methods of working and of management for all the Italian forests. These laws contain no special clauses with reference to privately owned forests and they are therefore subject to the same restrictions as regards management as forests which are public property.

In accordance with the terms of this legislation there is a certain classification of the forests, but the basis of this classification is never the status of the owner but the position and particular function of any particular forest from the point of view of the public interest.

All forests, whatever be the nature of the ownership, and all lands, whatever be their purpose, which during the course of exploitation run the risk of being laid bare or of disturbing the water system, are liable to certain restrictions (*vincolo forestale*) of a hydro-geological character and all such lands are officially classified.

Other forests again, which by reason of their particular position serve as a protection both for lands and buildings against avalanches, land slides, sand encroachment and wind risks, as also those that are considered of particular value

from the point of view of local hygiene, may on the request of representative bodies and directly interested groups, be restricted in the methods and extent of their exploitation. At the same time the owner receives compensation for his loss of revenue, for which the parties who have proposed the restrictions are responsible.

Apart from the law of the land, various provinces have local regulations containing detailed instructions, which have regard to the particular conditions of the locality and are intended to secure the proper maintenance of the forests and especially restoration after felling. Owners are at liberty to make their own arrangements as to the system of forest management that they may adopt for their forests and are bound only to respect any special local regulations.

The legal provisions in force safeguard effectively the preservation of the forests belonging to private owners. For all kinds of forests it is prohibited to change over to other forms of cultivation without the permission of the competent authority. The National Forestry Militia is empowered to exercise supervision and control and to prevent any kind of misuse, even in the case of unscheduled forests.

There is very little subdivision and re-parcelling of forests in Italy and it is in any case of little importance.

*Lithuania* Privately owned forests occupy 68,000 hectares or 8.7 % of the total forest area or 1.4 % of the total area of the country.

Certain restrictions exist similar to those prescribed for Latvia but only for forests with an area of upward of 50 hectares or specifically classified. (The reply from Lithuania has not yet reached the International Institute of Agriculture).

*Latvia.* Forests which belong to private individuals cover a total area of about 242,000 hectares, which is the equivalent of 14.6 % of the afforested surface and 3.9 % of the whole area of the country.

According to the legislation in force (law of 18 June 1923) the management of these forests is liable to restrictions only when they are over 50 hectares in extent. Forests of these dimensions must be managed under schemes approved by the Forest Department. Similar restrictions are imposed on forests situated on shifting sand areas even when the area is less than 50 hectares.

These regulations give very inadequate protection to the privately owned forests, inasmuch as the owner has always the right to divide up his property in small lots, of which the area is not as much as 50 hectares and he can then easily avoid the obligation to work his forests according to an exploitation scheme.

*Luxemburg.* -- The area of the privately owned forests is about 52,715 hectares representing 63.2 % of the whole forest area and 20.3 % of the total area of the country.

Previous authority is required for the clean felling of an afforested area of over three hectares or of any part of such area where the forest belongs to a private owner. This regulation does not however apply to stands of conifers, oak-coppice and new plantations during the first ten years. Compulsory regeneration must be carried out after felling.

These regulations have proved to work quite satisfactorily. The climatic and orographic conditions of the country make it unnecessary to classify certain forests as protection forests.

*Norway* — Privately owned forests cover an area of 5,320,794 hectares, which is equivalent to 70.95 % of the Norwegian forests or 17.17 % of the total area of the country. Forests belonging to foundations, joint owners and societies under the State Forestry Service are not here included.

Law No. 8 of 12 February on forest protection, which is the latest published, distinguishes three categories of private forests: (1) protection forests; (2) forests classified as "in peril" and; (3) unclassified forests.

In the case of protection forests, which are classified almost on the same lines as in the majority of other countries, all proposed fellings are previously subjected to specific indication by the State Service. Fellings for domestic use are unrestricted.

Provisionally and for a limited period and on the recommendation of the Department there may be classified as forests "in peril", such forests as, while not being properly classified as protection forests, may according to the view of the Department, by means of ill-advised felling and by reason of their situation, be so seriously affected that their regeneration would be impossible within a reasonable period.

As regards forest "in peril", the previous approval of the State is only required where it is desired to sell conifer timber or to use it for industrial purposes, fellings for home requirements being at the discretion of the owner.

Below are given the most important regulations regarding non-classified forests. Every forest owner who, in the opinion of the Forest Inspection Service, works his forest scientifically has himself the right to indicate the trees to be felled and to make his own arrangements. He must however draw a distinction between young and old stands. Young stands may only be felled in so far as is compatible with the regeneration of the stand and only when the felling is needed for the domestic requirements of the estate or it forms part of the regular management scheme. The Forest Service has the power in these cases to give such directions as it may consider advisable with reference to the felling. There is only one restriction put on the felling of the older trees, namely, that it should be carried out in such a way as not to impede or compromise natural regeneration. Previous authority is only necessary when a proposed cut for purposes of sale or industrial reasons extending over some considerable period might detract from the adequacy of the forest to meet normal domestic needs.

In all types of forest, grazing is carefully restricted and at the same time the transformation of afforested areas to other agricultural uses requires previous sanction.

*The Netherlands.* — Private forests in the Netherlands have an area of 213,000 hectares, i.e., 84 % of the total afforested surface or 6.5 % of the total area of the country.

There are no restrictions on the management of privately owned forests and the law in force contains one regulation only, whereby the owner is bound to pre-

vent or do all that is possible to check all loss caused by animals, insects, weeds, etc. It is always admissible to expropriate afforested land when required for the purpose of the protection of natural monuments and in such cases only it is competent to impose a temporary embargo on felling before expropriation takes place.

There is no forest classification in the Netherlands and it cannot be said that there are really adequate safeguards against wrongful exploitation of the privately owned forest lands which are in consequence constantly diminishing.

*Poland.* — The forests in private ownership cover a total area of 6,108,356 hectares corresponding to 68.3 % of the total forest lands and 15.7 % of the total area of Poland. In these figures are also included 84,906 hectares of forest belonging to ecclesiastical foundations and 85,061 hectares of other forests of public utility.

The decree-law of 24 June 1927, one of the strictest enactments promulgated in any country, at present prescribes regulations relating to the methods of management to be followed in the forests which are private property.

This law prescribes that no change in cultivation in the forest lands (including those not recognised as protection forests) can take place without the authorization of the competent authorities. All deforested lands and all fellings must be regenerated by natural or artificial means. All forests must be managed according to working plans approved by the State Forestry Service. A complete management scheme may be replaced by a simple plan of exploitation in the case of the less important forests, that is to say, according to district, the forests of less than 30 or less than 100 hectares. All pasturing is forbidden in woods less than 15 years old or less than 3 metres in height. At the same time owners are bound to notify insect attacks and the measures taken for their control. In default the State will take such action as may be necessary at the expense of the owners.

The law imposes special prescriptions of an even more severe character in the case of forests classified as protection forests. In these cases all clearings are forbidden and the Forest Service can stop close fellings, pasturing, the collection of grass, litter, etc. The present legislation gives adequate protection to the forests belonging to private owners against improper exploitation and subdivision.

*Portugal.* Privately owned forests cover 1,865,988 hectares, equivalent to 95.3 % of the total forest area or 21 % of the total area of the country; about 10 % of these forests are worked in accordance with the State Forestry system. (These data are for 1926 and olive, carob, almond and fig trees are not included).

The most important provision of the law of 24 December 1903 and of the Decree-law No. 13,658 of 20 May 1927 is to the effect that the placing of the forests and forest lands of private owners under State direction may be either compulsory or voluntary, but is only compulsory for private lands situated on reafforestation areas which are declared to be of public utility.

In addition an embargo is laid on any clearance of forests in order to change the type of cultivation without previous sanction. The regeneration of all fellings of the principal varieties is also compulsory within a period of two years. All clear fellings must be notified to the competent authority within a maximum period of 30 days after its completion. More severe restrictions are imposed on

the forests forming part of the lands for which reafforestation has been declared compulsory; these correspond to the protection forests in other countries and are under direct supervision by the State Forest Service. It is also necessary that they should be exploited according to approved management schemes.

The Institute has not as yet received the reply from Portugal to the questionnaire and it is therefore at present impossible to say how far the existing regulations have been found adequate for their purpose.

*Rumania.* — The forests held in private ownership in Rumania occupy a total area of 2,941,099 hectares or 41.2 % of the forest area and 10 % of the total area of the country. Forests belonging to joint owners, foundations, the Church, etc. and State administered are not included above.

The private forests in Rumania may be classified in two groups in accordance with the regulations of the forestry code of 1910 as supplemented by subsequent legislation in 1920, 1923, 1924 and 1930. These groups are as follows:—

(a) The forests of the plain and hill-lands. In these cases the only restrictions are an embargo on clearing without previous sanction and of pasturing until the stands have reached a certain age. No provisions are made requiring the owners of these forests to carry out regeneration work other than clearance fellings.

(b) The forests in mountainous areas and in general such as may be considered protection forests. These are subject to more severe restrictions than those of group (a) and must be managed under approved working plans. Permission is usually granted to fell timber on the sole condition that the owner makes a previous deposit of the sum required for reafforesting the areas which it is purposed to cut over.

Details regarding further regulations and the efficiency of the existing provisions as regards the proper preservation of private forest lands are not yet available, as the reply to the questionnaire has not yet reached the Institute.

*Sweden.* — The total area of privately owned forests and of forests belonging to Societies amounts to 17,841,200 hectares, which is equal to 77 % of all the forest lands and to 39.5 % of the total area of the country. It should be added that of this total 6,350,500 hectares belong to Societies.

Three different laws having reference to the management of private forests are in force. The law passed in 1903 has effect as regards 2 % of these forests and that of 1923 as regards 88 % while the Royal Decree of 1915 covers the remaining 10 %.

The law of 24 July 1903 refers to protection forests and prescribes that, as regards this group, fellings except for domestic purposes cannot take place without the previous designation of the trees to be cut by a forest-officer of the State. These regulations apply to the forests which are mainly situated in alpine zones to the South of Lapland, where, on account of the conditions of the environment, regeneration is extremely difficult and it is feared that the forest boundaries are receding.

The law of 15 June 1923 on forest preservation prescribes that fellings in the younger forests may only take the form of thinnings such as are required by the

development of the forest and that exploitation in other forests must be so carried out as not to imperil regeneration. In order to increase the possibilities of control over felling in exposed areas, particularly those on the coast, certain forests may be classed as forests of special difficulty as regards regeneration. In forests thus classified, of which the total area is upwards of half a million hectares, timber cuts for sale are allowed only when the trees for felling are previously indicated by the State Forestry Service.

The decree-law of 18 June 1915, regarding the forests in Lapland and in other districts in the provinces of Västerbotten and Norbotten, also require that in the case of all fellings there must be previous indication of the trees by State forest-officers. An approved working scheme is also compulsory.

Taken as a whole the regulations in force may be considered as adequate for assuring the preservation and proper management of private forest lands. As regards however the District to which the law of 1923 specially refers, the owners of lands laid bare as the result of exploitation previous to 1905 cannot be compelled to reafforest, and, in order to remedy this state of affairs it has been necessary to adopt other measures, such as subventions, etc.

It may be remarked as regards the law relating to Lapland that the provisions as to the obligation to undertake re-afforestation work on the over exploited areas are as yet inadequate, while on the other hand the severity of the regulations on the exploitation of the existing forests have brought about an excessive accumulation of over mature stands in the forests of Lapland.

*Switzerland.* — The total area of privately owned forests amounts to 276,353 hectares equivalent to 28.1 % of the forest area and 6.7 % of the area of Switzerland. These forests are chiefly to be found on the afforested parts of the sub-alpine districts which are very uneven and undulating and thus their value as means of protection against the elements is of greater importance than their area would seem to suggest.

In Switzerland all the forests belonging to private persons are classified as protection or non-protection forests.

The prescriptions relating to the management of these two groups of privately owned forests are to be found in the federal legislation, including the Federal Law of 11 October 1902 and the Order of 13 March 1903 and in the laws and special orders issued by each of the 25 Cantons of which Switzerland consists. The Confederation limits itself to laying down essential principles and to drawing up a general scheme within which the various Cantons are free to issue more detailed legislation and rules.

The Federal Law prescribes that clearances may not be effected in protection forests without permission from the Federal Government and in non-protection forests without permission from the Government of the Canton. Permission is generally granted on condition that the clearances are made good by the establishment of other forests. There are also Cantonal regulations which absolutely forbid clearances in certain cases.

Clear fellings and methods of exploitation which give similar results are, according to the terms of Federal Law, not permitted in privately owned forests

without the previous consent of the competent Cantonal Authority. In the Cantonal legislation there are still more restrictive provisions, as for example, in private non-protection forests, an absolute embargo on fellings which break the stands in high forest less than 60 years old or, in all forests, on clear cutting over certain areas. In addition many Cantons fix the amount of timber that an owner may cut in his forest without special permission, etc.

All the open spaces in forests produced by fellings or caused accidentally, as e. g. by fires, avalanches, cyclonic storms, etc., must according to Federal Law be replanted within three years, and in certain Cantons the period allowed is still shorter.

The regulations regarding complete or partial prohibition of the passage of cattle over private forest land also differ according to the particular Cantons and are the more strict where required by local conditions.

Protection forests are never allowed under the Federal Law to be burdened by new rights and claims which interfere with proper management schemes and previously existing rights are redeemed.

Certain Cantons have legislated for the prevention of subdividing private forests and also, in cases of special necessity, a regrouping of private forests may be ordered for the purposes of joint plan working.

In certain Cantons private owners may have their forests administered and managed by the Cantonal Forest Service but very little advantage is taken of this faculty.

The laws and regulations here summarized provide adequate safeguards for the preservation of the Swiss forests and in fact the total area of the privately owned forests has risen slightly during the last ten years.

*Czechoslovakia* — Privately owned forests, according to the 1920 statistics, occupy an area of 2,648,263 hectares, i. e., 58.5 % of all the forests or 19.4 % of the total area of Czechoslovakia.

The restrictions laid down by the old law of Austria in 1852 and, as regards the regions formerly belonging to Hungary, by the Hungarian laws of 1879 and of 1898 with reference to the management of private forests, are still partly in force. Law No. 37 of 29 February 1928, on the provisional protection of forests, and Governmental Decree, No. 67 of 26 June 1930, for giving effect to the law, introduce new and important restrictive provisions. In accordance therewith owners, who in virtue of the pre-existing laws managed their forests in accordance with working plans are bound to continue on similar lines. At the same time compulsion to exploit in accordance with approved schemes has now been extended to all forests with an area of upwards of 50 hectares.

Heavy felling is forbidden for high forest stands over 60 years of age and for coppice over 20 years, with an exception for oak coppice and for acacias, for which the limits are fixed at 15 years and 10 years respectively.

Owners who do not work according to management schemes are bound to declare all heavy fellings to the competent authority. Without previous sanction or declaration they are not allowed to make any cut unless the main annual felling does not exceed 25 cubic metres. Any owner who is exempt by law from

the obligation to follow working plans but elects to do so voluntarily is also exempt from compulsion to declare his proposed fellings.

The International Institute of Agriculture has not yet received the reply from Czechoslovakia to the questionnaire and therefore has no specific information as to the results given by these regulations and as to the difficulties which their enforcement may have encountered in practice.

*Yugoslavia* - The total area of the forest lands held by private persons is 2,523,606 hectares which corresponds to 33.3 % of the total forest area and to 10.2 % of the total area of the country.

In order to introduce uniformity into the forest management of the country as a whole, the law of 21 December 1929 has now replaced the former legislation which varied with the different regions of which Yugoslavia consists. Its principal provisions are the following :—

The clearing of a forest and any change in cultivation methods are forbidden without special permission, which will be granted only if it is in the public interest and in cases specifically determined by the law ;

Regeneration of all cuts is compulsory. If the owner of the forest does not carry out within the period allowed and according to the method prescribed the regeneration of the fellings or reafforestation of the denuded regions where required, the work will be carried out by the administrative authority at the expense and charges of the owner ;

A distinction is drawn between two kinds of forests : (1) " perpetual protection forests " which are so called either officially or on the request of the parties concerned ; (2) " temporary protection forests ", which are so called only at the express request of the persons interested ;

Clean felling is prohibited in protection forests and this class of forest in exceptional cases and as a last resort may also be brought under State Control ;

Forests privately owned with an area of over 300 hectares must be worked under approved management schemes and this provision may be applied also to forests occupying smaller areas when required in the public interest.

Private non-protection forests with an area of less than 300 hectares may be worked freely by the owner, save that any clear felling must be reported to the competent authority.

Privately owned forests may not be divided without the approval of the authority.

So far the Institute has received no information as to how far this recent law has proved successful in practice.

This general account of the regulations made in the various countries shows clearly that forestry policy in the different States aims at harmonising in the best way possible the two apparently opposed interests of the public and of the private individual. It may however, be remarked that to-day, contrary to the principles of the preceding period, preference is generally given to the public interest, the result being that a general tendency is being developed to increase restrictions on private rights, wherever the proper preservation of the privately owned forests



appears likely to be better secured by this policy. As a rule the newer laws seem to vie with each other from the point of view of severity.

At the same time it would not be possible to reply to the question which country has the most severe or most effective regulations simply by comparing the regulations themselves. In order to compare the results it is also necessary to take into account the special objects of forest preservation from the standpoint of private persons, the environmental conditions attaching to the presence and to the functions of the forests as also the stage of forestry training of the inhabitants of the country, the adequacy of the forestry state and many other questions. It frequently happens that very severe restrictions on private rights have not proved in their practical application as satisfactory in a particular country as in another where they are less strict. It is proposed for reasons of space to give more detailed explanation together with references to local conditions in the monograph now in course of preparation which was mentioned in the first part of this article published last month.

G. LUNCZ.

## MISCELLANEOUS INFORMATION

### General Agronomy.

#### General.

"TECHNIQUE VALUES" IN AGRICULTURE: THEIR DETERMINATION BY FOLIAR DIAGNOSIS (*Bulletin de la Société d'Encouragement pour l'Industrie nationale* - H. LAGATY, 1932, No. 12) — In this interesting article the writer gives an account of the results of his investigations to find a relatively simple method of determining the value of any particular cultural treatment. The farmer wants in a given year and a given soil to produce some agricultural product; the various operations by which he induces the plant to give the required "material yield" (*rendement matière*) have each an influence on this yield. The "technique value" of an operation in a given year, a given soil and on a given crop is the reaction, positive, nil or negative, on the material yield. A "technique value" is thus always localised in time and space. an agricultural process has a definite technique value only for the particular farmer in the particular year. The farmer would be able to determine the value for himself of such or such an operation found successful elsewhere by following the essential rule of the experimental method.

The writer in collaboration with M. L. MAUME has studied for 10 years to perfect and apply a method of observation of crops that he terms "foliar diagnosis", which is based on the chemical sensitiveness of the leaf to all factors which may influence the yield. The foliar diagnosis of a crop at a given moment is the chemical composition at that moment of a leaf taken from a suitably chosen place on the plant. The "annual foliar diagnosis" is the total of the chemical compositions of the leaf sampled as often as is necessary during the growth cycle; the annual foliar diagnosis thus gives a diagram as a function of time for each element tested. Some examples are then given showing the chemical sensitiveness of the leaf to factors of very different kinds, such as removal of the fruits, potash manure, phosphates, and time of manuring, which demonstrate the characteristics of the foliar diagnosis. The method is seen to be (1) *accurate*, for it shows by a chemical modification the influence exercised on the plant; (2) *sensitive*, for the chemical differences observed readily reach 1 % of the dry matter of the leaf. (3) *practical*, for the analyses do not require accuracy greater than is required in

the analysis of fertilisers ; (4) *graphic*, for it gives, as a function of time, curves of the variations throughout the vegetative cycle.

The final part of the article is devoted to the application of this method of investigation to the study of such crops as potatoes and vines. D. K.

### Fertilisers and Fertilising.

SOLUBILITY OF PHOSPHORITES AND LEUCITES IN THE SOIL. — C. ANTONIANI and M. NICCOLINI have made a study by the Neubauer method of the process of solubilisation of phosphorite and leucite in the soil when water to the extent of up to 30 % of saturation point has previously been added. In neutral or slightly alkaline soil the quantity of  $P_2O_5$  rendered soluble by 100 gm of soil is about 2 mgm; in slightly acid soil the quantity solubilised is about double. The process of solubilisation of leucite is more rapid: about 5 mgm of  $K_2O$  per 100 gm of soil after 2 months' contact, and 10 mgm after 6 to 7 months.

(*Giornale di Chimica Industriale ed Applicata*, No. 10, 1932).

G. S.

FERTILISERS WITH A COPPER BASIS ON BOG LAND — Weed-killers with a basis of copper (Raphanit, Hedolit) carefully applied to marsh land at the right time and in sufficient quantity completely destroy such weeds as starwort (*Stellaria media*), knot-grass (*Polygonum* sp.) and hemp-nettle (*Galeopsis Tetrahit*). But in addition to their weed killing action such products have a stimulating effect, as was shown in 1930 by an increase in the spring barley crop of 5.7 to 10.8 quintals per hectare on plots treated with "Raphanit" at a concentration of from 3 to 6 %. These observations led to the resumption of experiments in fertilising with copper sulphate, which had been abandoned in face of the very significant trials carried out towards the beginning of the century by BESELER and FRECKMANN on marshy soils. The tests effected from 1930 to 1932 have shown that the stimulating action exercised by Raphanit on grain production occurs also with other products having a copper basis, such as "Hedrinol", and in an even more marked form with copper sulphate. Copper sulphate applied as a powder some time before sowing in nearly every case had a marked effect. The optimum was reached with 25 kg of powder per ha. By this treatment the grain output was increased by over 7 quintals per ha, which represents a monetary gain of 115 R. M. per ha, the costs being 15 R. M.

Further experiments have confirmed what was already an established fact in Holland, namely, that a dressing of 50-100 kg of copper sulphate per ha is the most simple and effective method of controlling the "Ontginningsziekte" or "Urbarmachungskrankheit" (clearing disease) which causes great havoc on heath land recently brought into cultivation.

(F. BRÜNE, *Mitteilungen des Vereins zur Förderung der Moorkultur*, Berlin 1933, Nr. 1-3, pp. 30-49) N. G.

### Tropical and Subtropical Agriculture.

COTTON GROWING IN FRENCH EQUATORIAL AFRICA — The organisation of cotton growing in French Equatorial Africa is in its main outline similar to that of the Belgian Congo. The Government has conceded cotton zones to several companies concerned with cotton growing. These cotton zones are zones of protection surrounding the ginneries within which the Company has the sole rights of purchase. There are at present four such companies, namely, the Ouhamé Company, Nana, the French Equatorial Cotton Company, the African Textile Company and the Upper-Oubangui Cotton Syndicate.

The cotton possibilities of each zone are directly dependent on the density of the population.

Cotton is grown more particularly in the valleys of the Oubangui, the Bahr Sara, the Moyen Logone and the Mayo Kebbi. It was introduced from the Belgian Congo in 1925 when seed of Big Boll Triumph was imported.

Cotton in the Oubangui-Chari-Chad. — Comparative cotton growing trials in these regions have been undertaken by the French Equatorial Cotton Company which has established an experimental farm for the purpose at Moissala (Moyen-Chari)

Variety. — Investigations on the native cottons have established that wherever rainfall is abundant and prolonged and there is a high atmospheric moisture content varieties derived from the *peruvianum* type are found. In the drier regions the *punctatum* type occurs. The native names for the two types are "Tendé" and "Tchiki" or "Tiki". In addition to these two types there are also *Gossypium obtusifolium*, *G. barbadense*, *G. hirsutum* and various hybrids. This wide variety of types shows that it would be a mistake to sow one variety only in the Oubangui-Chari-Chad territory and that it is preferable on the contrary to adapt the varieties to the climate.

Three clearly defined climatic zones may be distinguished.

(1) The forest or semi-forest zone, which comprises the whole of the river region and the districts within the zone of influence of the Oubangui, extending up the lower stretches of its principal tributaries (M' Poko, M' Bali, Kotto, M' Bonou, Chinko). The rainy season lasts from 6 to 9 months, with a very pronounced atmospheric humidity and heavy clouds. The suitable varieties are those with a long growing period, having medium to long staple, such as, for example, those derived from *G. peruvianum* and *G. obtusifolium*, and the hybrids of *G. punctatum* and *G. hirsutum*.

(2) The zone of the forest savannah. This zone is characterised by a sub-equatorial climate; the rainy season lasts from 5 to 7 months. It is necessary to grow forms with abundant foliage giving a medium to demi-long stapled cotton, such as the *G. punctatum* and *G. hirsutum* forms.

(3) The grassland savannah zone. The rainy season is short and the rains irregular. A growing season of 3 or 4 months is all that can be counted on. The best cottons to choose are those belonging to the *hirsutum* type, with short to medium staple, which can withstand a short growing season.

Fifteen varieties were introduced at the Moissala Station and at the end of the first season (1931) the following results were obtained, in comparison with Triumph cotton as control

Variety	Comparative yield
Triumph . . . . .	185
Columbia . . . . .	170
Cleveland . . . . .	165
Deifos . . . . .	157
N° 4 . . . . .	150
N° 2 . . . . .	145
N° 5 . . . . .	130
N° 6 . . . . .	120
N° 3 . . . . .	117
N° 1 . . . . .	108
Meade . . . . .	100
Triumph . . . . .	100
Durango . . . . .	85
Acala . . . . .	81
Scasslag . . . . .	22
Pma . . . . .	5

It is apparent that most of the varieties tested gave greatly better results than Triumph. The Equatorial Cotton Company introduced further new American and South African varieties supplied by the Experiment Station of Barbeton (Union of South Africa).

In the native plantations in French Equatorial Africa the usual spacing practised is that in use in the Belgian Congo, *i. e.*, 1.20 m. o 45 m. The soils of Oubangui-Chari and Chad being usually of medium fertility it would seem that a greatly reduced spacing would be advantageous. Experiments to test this have shown that closer planting, particularly in the rows, is beneficial.

As regards time of planting, the experiments seem to indicate that earlier sowing than is usually practised would be better in the southern regions (Belgian Oubangui and Uélé), that is, in the first fortnight of June.

In order to encourage cotton cultivation the Governor General of French Equatorial Africa has procured an agreement between the four large cotton companies whereby an organisation will be formed for the study of methods of coordinating cotton production and marketing.

This organisation which will be under the direction of M. LUGARD will include a Central Station with a laboratory at Fort Archambault and three Experimental Stations, each corresponding to a particular climatic zone, at Bozoum, Mobaye and Moissala.

(*Colon et Culture Colonnière*, Dec. 1931 and April 1932, and *L'Association Colonnière Coloniale*, January 1932)

J. L.

CITRUS CULTIVATION IN GADAVARY DISTRICT, INDIA — The varieties grown on a large scale are *Citrus medica* var *acida* (sour lime), *C. sinensis* (Batavian orange) and *C. decumana* (pomelo). High level lands free from salinity are chosen, having facilities for irrigation and drainage. The soil of citrus gardens may be classified under four heads, namely:—

(a) *Pat soils* — In these soils heavy watering is required. Vegetative growth is small, the yield of fruit is heavy, but the fruits are not very sweet. The life of the trees is relatively short.

(b) *Black clay soils* — Growth is rapid, yields low and the fruits of only medium sweetness. The life of the garden is medium.

(c) *Red loams* — The life of the garden is long, the yield medium and the fruit very sweet.

(d) *Sandy loams* — Very heavy waterings are required. The trees make good growth and begin to yield soon.

For successful growth of the orange wind breaks are required, and for this purpose coconuts are planted. About fifty coconut trees can be planted round an acre garden. This system is an important source of income. The trees give a higher yield than those planted in a coconut garden for they take advantage of the manuring and irrigation given to the citrus trees. Fifty trees will after the first 5 years yield from 5000 to 7000 coconuts per annum. The citrus trees are propagated by seed. The seed is taken from medium aged trees (about 30 years old for lime and 40 for Batavian orange and pomelo.s) that are strong growing and healthy. The seed beds must be well prepared and are usually about 9 square yards. To sow such a bed requires 500 fruits of lime, 100 of oranges and 50 of pomeloes. Seed is sown in October and November; germination takes 20 to 30 days. In the third year the seedlings are transplanted into a second nursery. They are finally planted out one or two years later. Planting is done in October-November or December-January, on well prepared ground.

The seedlings must not be planted deeper than they were in the nursery. The spacings adopted are 8 yards for limes, Batavian oranges and pomeloes, which gives 75 plants to the acre. Coconuts are planted all round 6 yards apart. Irrigations are given once a week from December to June. Manure improves the yield and growth. Canal silt is considered the best manure for encouraging vegetative growth. Farm-yard manure improves both the vegetative growth and the yield. Town refuse is also applied but must be well decomposed, and the life of the tree is apt to be shortened on account of these manures rendering them more subject to gummosis and other diseases. Certain planters use also castor oilcake and green manures.

Lime trees begin to bear from 3 to 5 years after planting, Batavian oranges and pomeloes after 7 to 10 years. The average yield per acre per annum is 150 000 limes, 20 000 Batavian oranges and 8 000 pomeloes. The fruit is usually picked by hand. Every year before autumn the trees are pruned of dead and weak branches.

The commonest insect pests and fungus diseases are leaf-eating caterpillars in nurseries, stem borers, fruit moth, gum diseases, scab, and sooty mould on the leaves.

In good soil citrus gardens remain in full bearing for about 50 years and on an average soil between 20 and 40 years.

(P LAKSHMINARAYANA, *The Madras Agricultural Journal*, Coimbatore 1932, Vol. XX, No. 7).

IMPROVEMENT OF PASTURES IN RHODESIA. -- After a number of years of preliminary trial with numerous hay and pasture grasses, both indigenous and exotic, it was decided during 1929 to establish on the Agricultural Experiment Station of Salisbury small paddocks of woolly finger grass (*Digitaria pentzii*) and Hunyani grass (*Chloris gayana*), these appearing two of the most promising.

The encouraging results obtained led to an extension of the trials and paddocks were laid down in 1931 to *Brachiaria dictyonema*, *Setaria phragmitoides*, *Panicum maximum*, *Urochloa trichopus* and *Urochloa bulbodes*.

Before the experiments can be considered complete they must be continued for several more years. The investigation, so far as it has proceeded, however, throws considerable light on the possibilities of establishing improved pastures which, when well managed under a rotational system of grazing, will afford a considerably higher carrying capacity than the unimproved veld. It is hoped that farmers who have already established nursery plots of the more promising grasses supplied by the Salisbury Experiment Station will extend their acreages and give the resulting paddocks careful attention. Planting material of the improved grasses is offered for sale by the Station.

(From an article published by the Division of Plant Industry in *The Rhodesia Agricultural Journal*, Salisbury 1932, Vol. XXIX, No. 12). J. L.

COMPETITION FOR PROMOTING AGRICULTURE IN THE PUNJAB -- As announced previously in this *Bulletin* (1932, No. 9, pp. 338-339), the late Sir Ganga Ram, Kt., C.I.E., M.V.O., R.B., of Lahore handed over in 1925 to the Punjab Government a sum of Rs. 25 000 for the endowment of a prize of the value of Rs. 3000, to be called the Maynard Ganga Ram Prize and to be awarded every 3 years, for a discovery or an invention or a new practical method which will tend to increase agricultural production in the Punjab in an economically practicable manner. The competition is open to all in all countries.

Applications for the next award were invited by 31 December 1932. The response was, however, poor and it has been decided by the Managing Committee of the fund that the award should be postponed for another year. Further applications should reach the Director of Agriculture, Punjab, Lahore, on or before the 31st December 1933.

## Agricultural Engineering

**PLOUGHING BY ELECTRICITY IN ALGERIA.** — The application of the provisions of the law of 2 August 1923 in Algeria has made possible the construction of a rural electricity system which is already of importance and should be extended in the future.

The distribution of power solely for purposes of lighting and supplying certain small industries already in existence is not sufficient to make the system pay, consequently power ploughing is seriously regarded as a means of utilising electricity.

Ploughing is an ideal use for the rural electric supply, not only because of the large consumption but also because of the possibility of adapting consumption to the requirements of the central power stations. For instance, power will be consumed only outside the hours of maximum load, and even during the night when normally the enormous supply remains unused. Ploughing by electricity is especially suitable for very deep ploughing (*défoncement*) for vines and orchards, for semi-deep ploughing (*semi-défoncement*) for tobacco and ordinary ploughing for fallow, cereals, legumes, etc. At present it can only be expected to be effected by means of the windlass, as electric tractors connected to wires or worked by batteries will probably remain in the experimental stage for some time yet.

The question of the electric windlass for agricultural conditions in Algeria has been studied under the direction of Prof. BASTET, Director of the Testing Station for Agricultural Machinery in Algeria, and a model has been produced which is more powerful than steam windlasses and so more easily gives the required depth of ploughing.

One advantage of the electric windlass over the type worked by steam is that transport of coal and water is eliminated, the latter often being far from the scene of action in summer, which is the season for deep ploughing. From an economic standpoint however the electric windlass has also disadvantages: it immobilises a large amount of capital during the greater part of the year, while the steam windlass requires attention for the engine and boiler and so allows of a better distribution of labour.

The very deep ploughing, which is the ideal work for the electric windlass, is carried out by the companies or cooperative societies during summer in order to destroy the couch-grass, but may be at the beginning, end or height of the summer. During the remainder of the year the windlasses might be used for surface ploughing. This must however be done at stated times and requires only greatly reduced force of traction; consequently the powerful engine of the windlass is running on very little load, that is, giving an uneconomic yield, while not being able to complete the work to be done, owing to the limited time available.

It is evident that the realisation of power ploughing still presents considerable economic difficulties. A solution may be found in cases where the central power stations can supply the current at a price which allows the electric windlass to compete with the windlass worked by steam or by the Diesel engine.

(*Bulletin de la Société d'Encouragement pour l'Industrie Nationale*, Paris 1932, Nos. 7, 8, 9).

## II J II

**TRIALS OF MACHINES FOR WINNOWER, SORTING AND CLEANING GRAIN IN RUMANIA.** — During the periods from September to December 1930 and May to November 1931 comparative tests were carried out at the Experimental Farm of Bânceasa in Rumania to determine which of certain types of winnowing, grading and grain cleaning machines were best suited to agricultural conditions in Rumania. At first the tests were made with wheat, barley and oats, but later only with wheat, which presents most difficulty in sorting. The results obtained apply only to wheat.

The different machines compared were .—

(a) for winnowing machines : Hofherr-Schranitz N° 5 - D. Voina N° 5 - A. Rieger N. P. U. N° 6 - A. Rieger N. P. U. N° 7 - Resita Crivăţul - A. Rieger Regina.

(b) For grading machines. Marot A<sup>3</sup>, Marot B<sup>4</sup>, Marot B<sup>5</sup>, Denis II<sup>8</sup>, Clert N° 6, Flamminger Zudsey, Stahel & Lenner II<sup>2</sup>, Rieger Diana P<sup>1</sup>, Heid V<sup>2</sup>, Stahel & Lenner P<sup>2</sup>, Mayer I, Mayer ultratrieur, Mayer II<sup>2</sup>, Stahel & Lenner I.

(c) For cleaning and grading. Mayer Sparsuat, Rieger Columba, Marot B/6, Mayer Krafft, Jager Höchstlertrag, Schule Nova Miag, Petkus România type 12, Petkus Hohenheim I, Hofherr-Schranitz Piccolo, Hofherr-Schranitz Minor, Hofherr-Schranitz Selector I, Heid Sortator 25, Heid Mammut 35, Heid Sortator 1000, Elso Magyar Gazdasagi Gepgyar Superior I, Elso Magyar Gazdasagi Gepgyar Meteor, Clert T. C. D.

Certain Rumanian farmers had expressed a desire that the machines should be tested with particular regard to their capacity for separating wheat from rye, which is a common weed in the wheat fields

The results of the experiments are reported in full in *Analele Institutului de cercetari agronomice al României* (Bucuresti, Aprilie 1932, Vol IV, p 203-316) under the title " Incercareâ comparativa a masinilor pentru curăţirea si sortarea cerealelor ", by M. CHEDIVARENCO. The tests showed that amongst the winnowing machines those of local manufacture could be recommended provided that certain defects are eliminated.

The best of the grading machines are the Flamminger Zudse V/I and the Stahel & Lenner VI/2

Among the cleaning and grading machines the best results were obtained with the following : Jager Höchstlertrag, Petkus România, Petkus Hohenheim I, Hofherr-Schranitz Piccolo, Heid Sortator 25, Heid Mammut 35

II J II

## Animal Husbandry.

### General.

TWINS, DISTRIBUTION OF THE SEXES AND GENETIC VARIATIONS IN WEIGHT AT BIRTH, IN SHEEP. -- With sheep there is usually 40 % of males to 51 % of females. Mono-ovular twins are extremely rare in sheep, if they occur at all, which seems doubtful. The following factors are liable to influence variations in weight at birth : genetic influence (25-30 %), known environmental conditions (30-35%), unknown environmental conditions and accidental factors.

Such is the opinion of A. B. CHAPMAN and J. I. LUSH as a result of experiments carried out at the State Agricultural Experiment Station of Iowa on a flock of Hampshire sheep (*Journal of Heredity*, New York, 1932, No. 23)

THE ROLE OF HORMONES IN MAMMELLARY SECRETION -- Development of the udder during gestation is initiated by follicular activity and milk secretion begins only after the udder has reached a certain degree of development. The beginning of secretion is closely correlated with the development of the foetus and its membranes, but may also be caused experimentally by suppression of the follicular hormones or by injection of hypophytic hormones. The male sexual hormones exert a contrary effect on the development of the udder. Means of stimulating milk secretion also exist, but the mechanism of their action is not yet fully understood. During lactation even the function of mammellary secretion seems to be completely independent of hormones.

Thus it would seem that the correlation between the hormones and secretion exists only in connexion with the beginning of secretion.

(H. SIMONET, *Recueil de Médecine Vétérinaire*, Paris, 1932).

S. T.

### Feeds and Feeding.

CONSEQUENCES OF FEEDING LARGE AMOUNTS OF VITAMIN D. — Symptoms of poisoning have been produced by feeding to animals large quantities of hormones and vitamin D in the form of irradiated ergosterin. Dr. C. BAGNACCI, wishing to determine by similar tests whether large doses of vitamin D have also an injurious effect, fed up to 400 units per animal of vitamin D to rats, mice and pigeons, but was not able to prove any serious consequences

(*Biochimica e terapia sperimentale*, Vol. XIX, No. 9, 1932).

S. T.

FOOD VALUE OF CASSAVA. — By experiments carried out at the Physiologica Institute of Asunción, Paraguay, it has been found that feeding rats an exclusive diet of cassava (*Manihot palmata*) leads to progressive loss of weight as a result of lack of protein and vitamin A. Vitamin A deficiency causes a defective development of the bones, the symptoms of which are described in detail in the *Bollettino della Società italiana di Biologia sperimentale*, 1932, Vol. 7, No. 7).

S. T.

NEW METHOD OF DETERMINING THE FOOD RATION. — Dr. J. DUBISKI of Cieszyn, Poland, describes in the review *Zuchlungskunde* (Gottingen, 1933, No. 1) a new method of calculating the quantities of foods necessary in a mixed ration by formulae established by M. H. MACIEJEWSKI. An example will demonstrate how the method is applied. The ration of a sow should contain 3.8 kg of starch equivalent and 700 gm of available protein. The feeds are mixed as shown in Table I.

TABLE I

	Available protein	Starch equivalent
Ground oil-free soya . . . . .	401.0	71.2
Ground vetch . . . . .	200	65.0
Buttermilk . . . . .	32	10.5
Wheat bran . . . . .	113	10.5
Potatoes . . . . .	0.9	10.2
Mangolds . . . . .	0.4	8.2
Barley . . . . .	6.5	72.0

The ration must contain  $700 : 3.8 = 184.2$  gm of protein per kg. of starch equivalent. This ratio is denoted by M. Then the following calculations are made: (1) how many grammes of protein must accompany 1 kg. of starch equivalent in the different foods mentioned? (2) how many kg of foods are required for 1 kg. of starch equivalent? a ratio which is denoted by k<sub>1</sub>, k<sub>2</sub>, k<sub>3</sub>, etc for the different foods.

When the calculations have been made the foods are divided into two groups, the first including those of which the ratio starch: protein is greater than necessary for the ration in question (in the present example 184.2), the second containing all the others. The results of the calculations are shown in Table II below.



TABLE II.

Foods	Proteins in gms per kg of starch equivalent	Quantity of foods in gms per kg of starch equivalent	Number of foods of the respective groups
<i>Group 1</i>			
Ground soya. . . . .	564	$k_1 = 1.40$	P = 4
Ground vetch . . . . .	304	$k_2 = 1.52$	
Buttermilk . . . . .	305	$k_3 = 0.52$	
Wheat bran . . . . .	243	$k_4 = 1.15$	
$\Sigma_1 = 1416$			
<i>Group 2</i>			
Potatoes . . . . .	47	$k_5 = 5.20$	Q = 3
Mangolds . . . . .	49	$k_6 = 12.20$	
Barley . . . . .	90	$k_7 = 1.3$	
$\Sigma_2 = 186$			

Finally, if the starch equivalent required by the ration is designated by S, the necessary quantity of the various foods is found by means of the following equations :—

$$\text{For Group 1 :—} \quad X = \frac{(q M - \Sigma_2) S}{q \Sigma_1 - p \Sigma_2} k$$

$$\text{For Group 2 :—} \quad Y = \frac{(\Sigma_1 - P) S}{q \Sigma_1 - P \Sigma_2} k$$

It is seen that the fraction remains the same for all the foods of the same group, and that only the factor k changes. With these equations the required quantity of each food can be calculated ; for example, that of Ground soya is.—

$$X_1 = \frac{(3 \times 184.2 - 186) 3.8}{3 \times 1416 - 4 \times 186} 1.40 = 0.557 \text{ kg}$$

The amounts of the other foods of Group 1 are found similarly as follows :—

$$\text{Ground vetch } X_2 = 0.604 \text{ kg}$$

$$\text{Buttermilk } X_3 = 3.785 \text{ kg}$$

$$\text{Wheat bran } X_4 = 0.855 \text{ kg}$$

and for Group 2 :—

$$\text{Potatoes } Y_1 = \frac{(1416 - 4 \times 184.2) 3.8}{3 \times 1416 - 4 \times 186} 5.20 = 3.830 \text{ kg}$$

$$\text{Mangolds } Y_2 = 8.986 \text{ kg}$$

$$\text{Barley } Y_3 = 1.024 \text{ kg.}$$

A calculation of the total content in starch equivalent and protein shows that a mixture of foods containing the quantities indicated corresponds to that of the required ration.

E. M.

ARTIFICIAL FEEDING OF CARP IN RICE FIELDS (*Il Giornale di Riscoltura*, R. CHIAPPELLI, 1932, No. 12). — Rearing carp in rice fields with natural food supplies may give a yield varying between 80 and 120 kg of fish per hectare. With suitable artificial

feeding this yield may be quadrupled. The growth of carp depends on three essential factors: the temperature of the water, the area of water and the available food. Carp of one year's growth fed artificially in rice fields may attain a weight of a thousand grammes; small fry may reach 200 grammes. These weights are considerable when the large number of carp that may be put into a rice field is realised; allowing for the normal losses due to the enemies of carp, the yield per hectare of rice land may be estimated at 400 kg. of fish. In artificial feeding the special requirements of carp must be taken into account: the ideal food consists of worms, insects, small crustacea, molluscs and aquatic plants. All such foods are scarce in rice fields and must be supplied in the form of artificial feeds containing mineral and organic materials. Fish, having a lower body temperature than land animals, require less non-nitrogenous foods and a higher proportion of protein. To determine the necessary proportions of protein, carbohydrate and fat experiments were carried out by the writer of the paper, in which carp were fed with rice breakage, soybeans, blood, rice sprouts and rice bran ('pula'). The rations were arranged as follows.

- (1) In the first two pools - rice breakage and blood, with two parts of rice to one of blood, nutritive ratio 1 : 2 - mean growth, 129 gms
- (2) In the next two pools - one part of soybeans to two of rice breakage, nutritive ratio 1 : 4 - mean growth, 37.10 gms
- (3) In the next two pools - natural rice bran ('pula vergine'); nutritive ratio 1 : 6.6 - mean growth, 135 gms.
- (4) In the next two basins - rice sprouts; nutritive ratio 1 : 8 - mean growth, 67.90 gms.
- (5) In the next two basins - rice breakage; nutritive ratio 1 : 12 - mean growth, 39.30 gms.

Control : 5.10 gms.

Thus the best feed is that in which the nutritive ratio is 1 : 6, that is, rice bran. These experiments show that carp should receive concentrated feeds to give the maximum yield; they also show that it is not necessary to keep as close a nutritive ratio, for it results in a waste of protein-containing materials, which are relatively costly. To obtain an adequate nutritive ratio the fish farmer must divide the protein foods by the percentage of carbohydrates and fats multiplied by 1.44, that is to say, apply the following formula:

$$\frac{\text{protein materials}}{\text{fats} \times 1.44 + \text{carbohydrates}} = 1:6$$

D K

## R a b b i t s

STANDARDS FOR ANGORA RABBITS — In the *Rivista di Coniglicoltura* (Alessandria, 1932, Vol. 4, No. 10) it is suggested that uniformity should be introduced in the standards for Angora rabbits now in use in France, England, Germany, Switzerland and Austria. Italy has not yet developed a standard for the breed, but the article in question proposes that the German standard should be adopted; this requires a minimum weight of 2 ½ kg. As regards the length of hair it seems that for the present 7-8 cm would be adequate, but that a length of 10 cm should be aimed at. Special attention should be given to the production of a fine, thick-growing and absolutely white wool.

S. T.

## Agricultural Industries.

### Industries of Plant Products.

**PACKING SUGAR IN PROOFED PAPER BAGS** — Bags made of paper rendered impermeable by means of latex are preferable for sugar to those of the usual materials (cotton, etc). The sugar adheres less to the bag and the proofed paper is more resistant to penetration by deteriorating agents

Experiments in keeping sugar in 40 kilo proofed paper bags showed that, for a temperature of 42° C and 75-80 % moisture, losses by inversion and deterioration were scarcely 6 % of those with the ordinary cotton bags.

(*Facts About Sugar*, New York, 1933, No. 2).

G. S.

### Industries of Livestock Products.

**MILK GRADING IN THE UNITED STATES** — In the *Bulletin trimestriel de l'Organisation d'Hygiène* of the League of Nations for December 1932, G. S. WILSON, Professor of Applied Bacteriology at the London School of Hygiene and Tropical Medicine, gives a report on the study tour he undertook under the auspices of the League of Nations. This report is presented in a form which will be of great service to experts in countries which have up to the present been less actively concerned in the problem of dairy control.

A brief historical account is given of the development of dairy control and attention is drawn to the accomplishments of the Federal Government during the last eight years in introducing a measure of uniformity in the various systems of grading milk and to the opposition that has been encountered. There is an increasing tendency among farmers to demand that the price of milk shall be regulated according to its quality, based either on food value or on the hygienic conditions in which it was produced. If up to the present no completely satisfactory system has been evolved, the reason must be sought in the lack of a close correlation between the two standards of value.

As regards certified milk the writer questions the wisdom of the insistence on the part of the American Association of Medical Commissions that milk shall be sold raw. A general description of the permit or local system is followed by a second method of grading, called the Federal system. The writer calls particular attention to the mechanism provided for grading a town milk supply relatively shortly after the legislation came into force. The local and Federal systems are compared and the defects of the system of bacteriological grading are pointed out, showing that the results are not always comparable or accurate. Such criticisms are made by the writer with all respect to a country whose unceasing efforts to supply the cities with safe milk may be quoted as an example to the rest of the world.

E. G.

## Agricultural Training.

**THE STATE AGRONOMIC INSTITUTE AT GEMBOUX, BELGIUM.** — A series of articles in *Le Soir* has been devoted to University education in Belgium and that on the Agronomic Institute of Gembloux was reproduced in the *Annales de Gembloux* for January 1933. Founded in 1860 this Institute will celebrate its 75th anniversary in 1935. It occupies the buildings of an ancient abbey, in the garden of which the Benedictines planted various kinds of walnut trees. The number of students is about 200, half of whom are foreigners. The degree course lasts 4 years, and there are 6 sections each



FIG. 1. - Lactological Section of the Regional Zootechnical Institute of Brno, Czechoslovakia.



FIG. 2. - Agricultural Experimental Station of Ain el Hadjar, Algeria.

giving a separate diploma: — 'ingénieur agronome', 'ingénieur des eaux et forêts', 'ingénieur horticole', 'ingénieur des industries agricoles', 'ingénieur du génie rural' and 'ingénieur d'agronomie coloniale'. The academic council of the Institute wishes to extend the course of studies to 5 years

Besides the Agronomic Institute there is also an Agronomic Station with various sections which is concerned with experimental research. Advice is given to the public.

It is proposed when general conditions are more favourable to form a Centre for Studies relating to the Dairy Industries.

G. R.

### Agricultural Research.

LACTOLOGICAL SECTION OF THE REGIONAL ZOOTECHNICAL INSTITUTE OF BRNO, CZECHOSLOVAKIA. — This Section, which was opened in January 1923, has an annual budget of 15 000 Kč for laboratory work and 10 000 Kč for other research. The staff consists of the Director, J. GROH, and 4 assistants. The activities of the Section are at present directed to the study of the storage of ensilaged fodders and their influence on the quality of milk and milk products, the composition of milk in relation to the kind of feeding and the time of milking, the composition of butter fat coming from various regions of Moravia after winter and summer feeding, and bacteriological and chemical processes in the maturation of cheese.

The Station's results are published in its annual reports and in various Czechoslovakian periodicals. Correspondence is carried on in Czech and German

E. G.

AGRICULTURAL EXPERIMENT STATION OF AIN EL HADJAR IN THE DEPARTMENT OF ORAN, ALGERIA. — This Station, which was founded in 1925, is situated on the high plateau of Oran at a height of 1 000 metres. The annual budget is about 150 000 francs; the expenses are covered by the Government General of Algeria. The experimental fields are on alluvial sandy clay and have an area of 105 hectares. The Station is under the direction of an agricultural specialist who is assisted by 5 employés; there is no seasonal labour.

The general work consists in the draining and reclamation of an ancient marsh, bringing it into cultivation with, more especially, cereals and lucerne. The special work is connected with the study, selection and acclimatisation of new varieties of cereals. There is also an experimental orchard. The selection of local livestock, particularly sheep, is also undertaken.

The results are made known to farmers through the Agricultural Syndicate of Borda.

J. L.

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# MONTHLY BULLETIN

OF

## AGRICULTURAL SCIENCE AND PRACTICE

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### EDITORIAL

#### Agricultural Research in the World.

It is universally recognised that the scientific farming of land raises a host of problems which necessitate for their solution the collaboration of the research stations and the specialised laboratories. Whether it is a matter of tillage and fertilisation, of plant and animal selection, of the control of pests of crops, of the breeding of domestic livestock, of agricultural equipment, or of the industrial utilisation of farm products, progress in technique is increasingly a *sine qua non* of production.

For this reason the Governments of the different countries are concerned with the organisation of agricultural research, in order to help the farmer to produce more and better, or, what is at present more to the point, in the hope of directing his efforts towards obtaining products which will find a ready and remunerative market.

No one would dare nowadays to dispute the necessity of a serious and scientific study of the infinitely varied aspects of the problem of the exploitation of land.

Unfortunately it is difficult to compute accurately what efforts have been made in each country to promote agricultural research. The first work that is necessary in this connection is the establishment of a complete list of the Institutions concerned with agricultural research in the different countries of the world.

Such a work has been attempted several times, but without great success. There have been recalled here (*Monthly Bulletin of Agricultural Science and Practice*, September 1932) the efforts made in the United States to publish a list of « *Agricultural Experiment Stations in Foreign Countries* ». This list, which appeared in 1904 has not been kept up to date and now offers only a historic interest.

The difficulties of carrying out a work of this kind are considerable. The Bureau of Agricultural Information of the International Institute of Agriculture has however surmounted them in a work accomplished with great thoroughness and accuracy by M. D. Kaltenbach. This work, which has just been published under the title « *Les Institutions d'Expérimentation Agricole dans les Pays l'empérés* », consists of 276 pages of text and an index. The material has been divided geographically, the principal divisions corresponding to the five continents. For each continent the countries are arranged in alphabetical order of their French names. For each country a uniform general arrangement has been adopted. a first paragraph briefly describes the general organisation of agricultural research, a second paragraph contains detailed information about the experimental stations. Each of the latter is designated by its French name followed by the name and exact address in the language of the country. The information concerning each of these Stations is given, whenever possible, in the following order :—

- (1) Exact geographic position, climate, country served ;
- (2) Date of foundation ;
- (3) Budget ;

- (4) Origin of the funds ;
- (5) Acreage of the land and nature of the soil ;
- (6) Personnel employed, technical staff, number of temporary employés ;
- (7) Equipment (only when it presents special features) ;
- (8) Plan of work followed ;
- (9) Work accomplished, work now in progress, and results ;
- (10) Methods of making known to farmers the results obtained in the Station ; publications ;
- (11) Languages of correspondence.

The volume as a whole represents a considerable mass of documentation of an extreme interest for agricultural experts. It is in fact easy to foresee that this publication will enormously facilitate the establishment of profitable relations between research workers in different countries. We shall be happy to receive any criticisms which may be suggested by the initiative we have taken and the manner in which it has been carried out.

Prof. GEORGES RAY.

## ORIGINAL ARTICLES

### General Considerations on the Methods of Organisation of Agricultural Research.

If the different countries in Europe and America are reviewed it is found that in each of them agricultural research is now receiving special attention. In the past this branch has nearly always been encouraged in its early stages by private initiative. The initiative has then passed to the Governments when the advantages which might be drawn from it by the respective countries were realised. Now in all countries both official agricultural research stations and private agricultural research stations are found, being in some measure complementary to each other.

In the United States, for example, where there is a very complete system of official stations the private stations are relatively few ; very often the private stations have been taken over wholly or in part by the State, which by participating in the finances has a right of inspection.

The more extensive is the official experimental system in each country the more does the need for organisation make itself felt. This organisation has been realised in different ways in different countries, but it has always the same object and requirements, namely, to extend as completely as possible over each country a research organisation which shall be more or less interdependent and attached by a greater or less number of intermediaries to a central organisation.

It is this system which has allowed research to give its maximum output. In certain countries such organisation has been very fully developed as, for example, in the United States, Canada, France, Italy and many other countries in which the Ministry of Agriculture is at the head of the system. Effecting a liaison between the Ministry and the Stations is a great variety of intermediary organisations. Let us take the case of Italy : the Ministry of Agriculture and

Forestry consists of the General Administration of Agriculture, which contains 5 divisions, namely, General Affairs and Agricultural Industries, Crops and Plant Diseases, Agricultural Research (1), Agricultural Propaganda and the Zootechnical Service. The Stations are under this Administration. In northern Ireland the Ministry of Agriculture contains 17 divisions of technical research : Animal Diseases, Plant Selection, Crop and Animal Husbandry, Animal Nutrition, Seed Testing and Plant Diseases and Agricultural Economy, which are the central organisations for the research carried out in the Stations.

Between the Ministry and the Stations there often exists a central organisation. This is the case in Canada with the Central Farm of Ottawa, which contains 14 divisions each centralising the research work in the region it serves ; under this central Farm are 22 farms and stations constituting the experimental system of the Dominion. In France there is the Institute of Agronomic Research of Paris, attached to the " Direction de l'Agriculture ", which has gradually grouped and reduced in number the Stations and Laboratories. Thus in France there is a relatively small number of Stations, grouped by regions and each forming a Centre of agronomic research. However, certain specialised Stations remain independent of these regional Centres and are responsible for administering the research establishments depending on the Ministry of Agriculture. In Rumania we find also the Institute of Agronomic Research of Bucharest which has been recently formed and by means of which the State has been able to form a great number of plant improvement Stations which support and direct private Stations ; this Institute of Agronomic Research is divided into 4 sections (plant genetics, phytopathology, agricultural chemistry, rural economy); under this are 13 Research Stations. In Lithuania agricultural research is also dependent on a central organisation, the Establishment of Agricultural Experiments of Lithuania, which was founded in 1926, but here this is only an autonomous centre of organisation and coordination attached to the Chamber of Agriculture and maintained by the Ministry of Agriculture. In Czechoslovakia in order to organise effectively the research work a Syndicate of Agronomic, Forest and Agricultural Industries Research Institutes has been formed at Praha-Dejvice, which groups all the State, provincial and privately owned Institutes and Stations. In Switzerland the coordination of all the Cantonal Institutions subsidised by the Government has been ensured by placing them under the control of the Federal Institutions created by the Federal Law of 1893. The Federal Stations are dependent on the Federal Economic Department ; two Commissions establish every year the programme of activity of the Stations. In Poland a Commission of Collaboration in Research, composed of representatives of all the classes of agricultural

(1) The Decree No. 1499 of 15 August 1924 established at Rome under the General Administration of Agriculture of the Ministry a *Foundation for Agricultural Experimentation and Research*, the purpose of which was to subsidise the Agricultural Research Institutes in order to develop and coordinate their activities.

The Royal Decree No. 2450 of 11 October 1928 instituted a *Committee for Agricultural Research*, entrusting to it the work of this nature previously assigned to the Superior Council of Agricultural, Industrial and Commercial Instruction.

experimental establishments and working in cooperation with the Ministry of Agriculture coordinates the work of the Stations and organises the conjoint work and determines the methods of carrying it out.

In several countries there exist in addition to the Ministry of Agriculture various organisations which act in an advisory capacity to the Ministry. Thus in Norway we find a Committee of Direction which consists of the Directors of the Stations and is the adviser of the Director of Agriculture and of the Ministry for all questions concerning the Experimental Stations and Experimental Farms; this Committee holds an annual meeting in which any questions of general interest are discussed. In Estonia where agricultural research has developed only since the country's independence the Ministry of Agriculture is assisted by a consultative organisation, the Council of Agricultural Research. This Council is formed of the Directors of all the Research Stations and of the Sub-Stations, and of Delegates from the Ministry of Agriculture, from the Central Public Organisations and from the Schools of Agriculture. The function of the Delegates of the organisations is to present the requests of the farmers: the Council includes several sections which study the questions of their competence and submit them to the Council. In Denmark agricultural research is under a State Commission for the Cultivation of Plants; this Commission consists of 5 members whose appointment is referred to the Ministry of Agriculture on the proposal of the following organisations: the Direction of the Royal Danish Agricultural Society, the Union of the Danish Agricultural Associations, the Association of the Danish Small Land Owners, the Union of Horticultural Societies and the Danish General Association of Gardeners. The members of this Commission are elected for 5 years; they receive no payment; a Director is nominated from among them by the Ministry of Agriculture. The Ministry of Agriculture of Bulgaria is also advised by a special Committee. Agricultural research may also be under an independent organisation, as is the case for Iceland, where the experimental work is carried out by the Iceland Agricultural Society. The action of this Society now extends over the whole country; it has founded research stations which carry out experiments in the different regions of the island with funds granted for the purpose by the Parliament. Finally, in other countries in which research is still in a less advanced stage there is no centralising or advisory organisation between the Ministry of Agriculture and the research establishments (Turkey, Persia, Yugoslavia, etc.). Certain large countries have retained a special organisation by reason of the division of the country into several States. In Germany, for example, it is the different States (State Ministries of Agriculture) which undertake experimentation and research; this is the reason that the organisation presents great differences in the different States, in which local conditions also differ. The difference should be noted between this and the case of the United States of America in which, although they are a Federation of States, each State has an identical organisation of research.

Amongst the organisations which play an important rôle in the matter of research should be mentioned the Universities, Colleges, and Chambers of Agriculture. In certain countries the official research is to a large extent dependent on the Universities and Agricultural Colleges. This is the case for England where

the research institutes are not, with two exceptions (Plant Pathological Laboratory and Veterinary Laboratory of the Ministry of Agriculture, Government institutions. In most cases they form a division of a University (Research Institutes of Cambridge, Oxford, London), but in certain cases they are quite independent. In other countries the research institutes dependent on agricultural academies also occupy an important place: the Agricultural Academy of Norway, for example, possesses several Stations; the same is the case for the Universities existing in Greece, Latvia, etc.

The Chambers of Agriculture possess their own Experimental Station in Austria, Poland, etc. In Lithuania research is dependent on a central organisation, namely the Establishment of Agricultural Experiments of Lithuania, which is only an autonomous centre of organisation and coordination attached to the Chamber of Agriculture and maintained by the Ministry of Agriculture.

The Agricultural Colleges also play an important part in research whether the latter is carried out on the land of the College itself or whether the College has under it several Experiment Stations. In the United States each State has its University, each having an Agricultural College with its Experiment Station. In New Zealand where there are 7 large organisations concerned with research, 3 are Colleges or Institutes. In Scotland 3 provinces are distinguished each having an Agricultural College (Aberdeen, Edinburgh, Glasgow) carrying out research and giving advice in the zone that it serves. The experimental function is so close to that of teaching that very often the members of the teaching staff of a College are also concerned with research. In order to organise more effectively the research system the country has been divided into a number of provinces and in each of these has been chosen a Centre which is generally dependent on a University or an Agricultural College (England). In France the great Schools of Agricultural Training possess Stations and in addition to the Departmental Experimental Stations we find a whole series of regional or departmental Agricultural Schools concerned with research. Agricultural training is thus nearly always and in all countries supplemented by research. It follows that these two branches are becoming mixed to a greater or a lesser extent according to the country. In order to facilitate the work and render it systematic in countries in which agricultural research has taken a great development the necessity of a division by specialities has made itself felt. Thus for example in Northern Iceland the Ministry of Agriculture has seven research divisions (animal diseases, plant selection, crop and animal husbandry, chemistry and animal nutrition, seed testing and plant diseases, dairy bacteriology, agricultural economy). This specialisation is more or less developed in the research establishments themselves; in France the 11 Agronomical Research Centres each have several research divisions; in the United States specialisation is carried still further. The chief purposes of the different research divisions of a Ministry of Agriculture is to indicate the general lines to be followed in the research work and to centralise the results. -

The work of making known the results in the country belongs both to the Ministry of Agriculture and to the research establishment itself; hence the creation by the Ministry of a propaganda service (in the United States we find the

State and Federal Agricultural Extension Service, which has agencies in nearly all the counties of America), and a publication service, each Ministry publishing an account of the principal experimental results obtained in its State. It is chiefly on the Stations that falls the work of popularisation by publications, lectures, visits, sale or loan of seed, propaganda tours, etc. Certain countries have undertaken the publication of the results obtained in a very complete fashion by utilising their advisory service. In England this service consists of specialists attached to the agricultural divisions of the Universities and to the Agricultural Colleges; these officials come constantly and directly in contact with the farmers of a given zone so that it is possible for them to determine what are the problems of local importance, and to apply the results obtained in the Stations to their solution. In Poland the social agricultural organisations and autonomous territorial powers possess Agricultural Instructors with various specialities; certain of these are concerned with experimentation for demonstration purposes on the farms of the growers of their districts. In Italy it is to the Itinerant Schools of Agriculture that the work of making known the results of the research carried out in the Stations largely falls.

If we pass now to financial considerations we find that it is rare for the stations and the research institutes to be entirely self-supporting (by means of sale of the products, receipts for analyses, etc.), except in quite special cases such as, for example, that of the Wheat Research Institute of New Zealand at Christchurch, which receives 1 ½ pence per ton of wheat sold by the farmers, 1 ½ pence per ton of flour produced by the millers and 1 ½ pence per ton of flour bought by the bakers, the whole representing an annual revenue of about 2250 pounds sterling. Generally a Station has three sources of revenue: the receipts from the sale of its products, State grants and private donations. The State grants are from the funds assigned by the Government to the Ministry of Agriculture. In several countries the Ministry of Agriculture has special funds available for agricultural research. In the United States Congress has accorded to each State an annual sum of 90,000 dollars for the maintenance of an Experiment Station, this sum coming from three different funds (Hatch fund, Adams fund, Purnell fund). The remarkable extension taken by agricultural research and consultation in England in the period 1922 to 1926 is due to the "Corn Repeal Fund", a sum of 1 million pounds sterling having been supplied by the "Corn Production Acts" for the development of agriculture. Since 1926 the research institutes of this country have obtained assistance from a new fund, the Empire Marketing Board Fund, for work to be carried out not only in the country itself but also in the different regions of the Empire. In certain countries, in order to be able to subsidise the Research Stations, the Ministry of Agriculture has levied a special tax: in Bulgaria, for example, the Ministry receives a tax of 1 *lev* per kilo of tobacco leaves exported.

Simultaneously with this development of official experimentation a great number of large agricultural associations, realising the advantage that would be gained by having special experiment stations, have formed research Centres which constitute the private experimentation existing in all countries. Such, for example, are the Stations created by the Selected Seed Producers Associations,

the Associations for the Cultivation of Peat Lands (e. g., the Swedish Association for the cultivation of Peat Land at Jönköping), by the industries concerned in the research (Waltham Cross and East Malling Stations in England), by the great railway companies (Experimental Station of the P. L. M. at Dijon, France). The examples of Stations formed in this way are very numerous and they are nearly always highly specialised in a given branch. Finally there exist Stations belonging to certain individual research workers.

Another method of realising agricultural research is given us by Iceland where between 1903 and 1915 under the auspices of the Iceland Agricultural Society were formed the Federations of Agriculture, which extend over the whole island. The oldest of these Federations are the "Société de Culture du Pays Nord" at Akureyri and the "Fédération Agricole du Pays Est"; these two societies have permanent experimental stations. In several countries private research work has become considerably developed and private research Circles have been formed among the farmers, commonly known as "Versuchsringe". In Germany where most Circles are found there are 400. They are constituted into societies with a Chairman and an Administrative Council and each engages an expert who carries out the research which seems by the various farmers forming part of the Circle to be required from an essentially practical point of view. However in the regions of small holdings these "Versuchsringe" have for financial reasons been placed under the direction of the Schools of Agriculture. This system of Circles or Associations of research has been developed also in several other countries (Austria, Poland, etc.). In order that the whole of the work carried out by the Circles may be profitable and to give a more uniform direction to the research there is an increasing tendency to create Centres; in Germany the Chambers of Agriculture constitute such Centres.

D. KALTENBACH.

### **Genetic Improvement and Fertilisation of Rice in Italy, Ceylon and Indo-china : The Statistical Method and Comparative Trials in the Field.**

After three years devoted to the improvement of rice growing in the delta of the Tonkin it has been considered useful to compare our technique with that of workers abroad carrying out similar research. It is with this purpose that we visited various rice growing Stations in Italy and India.

Our most cordial thanks must be expressed to :

Dr. ORLANDI, Director of the firm of the "Produttori Sementi" of Bologna ;

Ing. SAMPIETRO, and Dr. CHIAPPELLI, of the Experimental Station of Vercelli ;

Mr. K. RAMIAH, Paddy Specialist, L. Ag., of the Station of Coimbatore (Madras, India) ;

Mr. I. C. HAIGH, Economic Botanist of the Station of Peradeniya, Ceylon ; for the unfailing kindness with which we were received at the Stations and all necessary explanations were supplied.

Below will be given the essential points of the information collected (completed for India and Ceylon by bibliographical research), ending with a short



critical account of the methods of work used in Indochina, which has been communicated by MM. DEVISME, Director, and CATY, Chief, of the Genetical Laboratory of the 'Office Indochinois du Riz', and with a study of the comparative trials in the field and of the statistical method.

## I. — ITALY.

### A. — Genetical Improvement.

(Methods of Dr. ORLANDI of Bologna).

#### I. — *Aim of improvement.*

It is endeavoured in the first place to produce varieties resistant to lodging and to disease, and capable of giving fine milling rice of the "Lady Wreight" type (this variety is much used for cross breeding both at Bologna and at Vercelli). The yield factor, except in the case of too great a drop, is regarded as of only secondary importance. As there is a difference of 20 to 25 liras per quintal between the prices of the common varieties and that of the fine varieties it is more worth while to produce, for example 60 quintals of 'Nero Vialone' to the hectare at 90 liras, than 70 quintals of "Cinese Originario" at 70 liras the quintal (rate of September 1932).

In the region of Bologna "Americano 1600" has replaced a long grained "Originario" which was too susceptible to disease. The grain of this variety has a more or less extensive opaque zone; the character is hereditary as is shown by a study of the progeny of different strains in which it is more or less accentuated. In the new varieties it is sought to obtain a grain with a very reduced, or if possible absent, opaque zone.

A comparatively early maturity is also sought which would make it possible to harvest a well ripened paddy even in a cold and rainy autumn. In a rice field at Vercelli we found after milling a large proportion of green unripe grains. The correlation between length of growing period and yield though general is not absolute. It is possible to ally early maturity and high yield: it is necessary to find varieties assimilating much in a short time, as has been done by TODARO in the case of wheat. Short stalked varieties are wanted (resistance to lodging), with a panicle not too bent when ripe, and with grain compact on the stalk and adhering well (resistant to shedding). A long translucent grain is wanted; a dark coloration of the node, glumes, etc. is desirable, as it is thought that pigmentation corresponds with a good quality of grain (Nero Vialone, a variety which is highly valued, shows this coloration). Coloured varieties are desired for a further reason. *Panicum*, a tiresome weed which is the great enemy of rice, is often difficult to distinguish in the early stages of growth from the young rice plants, particularly when the seed has been broadcast as is the custom in the region of Bologna. One is obliged to delay the hoeing because, when the plants are older, they are readily distinguishable, but this is unsatisfactory in practice as the rice suffers for it. It is desirable for this reason to have pigmented varieties which are easily recognised even when young.

In regard to resistance to diseases, and particularly to "rice blast", direct observation is necessary, and isolation of the strains which seem to remain immune; morphological characters correlated with resistance have not yet been found. A great tillering capacity is also desired, as it is thought that, as SCHRIBAUX found for wheat, high yields are obtained more easily with many small ears than with few fine ears.

## 2. — *Pure line selection.*

The selection of the best lines from among those isolated is based on the characters indicated above. Each line is cultivated in a small breeding plot of one metre square, in which 36 plants are planted 20 cm. apart. The most defective strains are eliminated the first year, the others are cultivated two or three years longer in order to be sure of their homogeneity and to see whether they show genuinely interesting characteristics, either in small squares as before, or in plots of  $5 \times 4$  m. or still larger.

The yield is recorded only for the varieties which have shown themselves of interest for their other characteristics. The paddy obtained on the plots of twenty ares is noted without replication, or better still on plots of several ha. Dr. ORLANDI considers that though in the case of wheat one can obtain the yield per hectare by multiplying the wheat harvested on one are, for rice it is necessary to divide the wheat obtained by the number of hectares cultivated; thus the trial plots must be of several hectares. This process seems not to be applicable outside this country where rice has been systematically cultivated for a long period so that the fertility of each field is well known, and where according to the average yield of the region and the weather conditions an estimate may be made of the crop which would have been given in the year in question by the common variety if it had been grown on the trial plots in place of the new varieties. Further we have already shown that a difference in yield is of no importance unless it is large and therefore easy to observe.

Pedigree selection is thus not used for itself, since it is observed in isolating the different strains of a population that only small differences in yield as in other characters are shown. Pure lines are produced in order to give a homozygous material for hybridisation.

## 3. — *Hybridisation.*

The individual plants that it is desirable to hybridise are grown in pots placed in glasshouses or in cement troughs with a metal grating. The two parents are sown together if they have the same length of growing period, if not the earlier variety is sown later. When cement troughs are used the two strains to be crossed are planted side by side. If necessary the early variety may be planted out later.

When the panicle has become free from its sheath the stamens are removed.

Certain Japanese writers hold that grain coming from artificial pollination cannot develop if the tip of the glumes is cut off; one is obliged to remove them as they hinder the removal of the stamens. Since 1926 hybridisation has been practised in Italy by cutting off the tips of the glumes (at  $\frac{1}{4}$  or  $\frac{1}{3}$  of the length from the top) and grains smaller than normal are obtained, with small nutritive

reserves, but capable of ensuring the development of the seed if placed in good conditions. In Malaya also this practice is followed; but at the Station of Sueca in Spain, in India, Ceylon and Japan, the removal of the glumes is practised.

As soon as the panicle is free, or three or four days (rarely five) before flowering, the top and bottom twigs of the panicle are removed, and the tips of the middle twig which are retained. Then one cuts off the tip of the glumes on the flowers which remain and the stamens are removed taking care not to touch the stigma. At this date there is no risk of self pollination even if an unskilled worker breaks open the anther by tearing it with the forceps. This operation is done in the evening between 5 and 6 p.m. (1).

The flowers thus castrated are wrapped up in a small piece of muslin or paper to avoid pollination.

The day on which the flowers are physiologically ripe, between 12 and 2 p.m., at the warmest and driest moment of the day, the panicle of the plant selected as male parent is shaken over a watch glass; the pollen collected is taken immediately on a small brush; the muslin protecting the female flower is removed and the flower stroked lightly with the brush without removing the glumes. It is considered that fertilisation will result, consequently the flowers are no longer protected. It is necessary to be careful to do this operation in the middle of the day when the moisture of the atmosphere is low, for rice pollen readily sticks together under the influence of moisture. It is for this reason that the pollen is collected only at the moment when it is to be used. With wheat on the contrary the operation can be done at any hour.

The following spring the hybrid grains obtained are put in saucers to germinate; then each grain is sown in a pot filled with soil disinfected by heat to avoid bacterial infection; it is watered with a nutritive solution (nitrate and superphosphate).

The plant ( $F_1$ ) has one or more panicles; 30 or 40 grains are sown in pots, one grain to a pot, and planted out, plant by plant, in a small plot. This is the  $F_2$ . A few grains of  $F_1$  are kept in reserve in case any accident should kill all the plants.

In the course of the  $F_2$  generation there is generally apparent a separating out of variants. The variants are removed at once.

The grains of each plant of the  $F_2$  are sown separately, and to each plant of the  $F_2$  correspond in the  $F_3$  a small square of 36 plants, planted 20 cm. apart (squares of  $1 \times 1$  m.). These squares are all cultivated in the same field; an interval of 1 m. is left in every direction to allow of ready access and observation.

In the  $F_3$  will perhaps be found some entirely homogeneous plots coming from an  $F_2$  homozygote. The great majority of the lots, perhaps all, are heterogeneous. In each of these squares the plants which appear to have interesting vegetative and grain characteristics are removed, and the same is done in the  $F_4$  generation.

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(1) In Malaya (*Malayan Agricultural Journal*, November 1931) castration is effected on the day before flowering at the same hour, as it is considered that the risk of the opening of the anthers is much less in the evening when the moisture content of the air is higher.

The homozygotes obtained in the  $F_3$  or following generations are propagated in bulk. If homogeneity is maintained and if the plants appear to possess a satisfactory combination of the characteristics of the two parents one proceeds to bulk multiplication by rice growers. The Station has available only glasshouses near the laboratories and two experimental fields, the largest of 4 ha. At harvest time the yield obtained on the large areas by the rice growers is recorded. The appearance and hardness of the grain are examined from the  $F_3$  generation by sampling certain panicles from which the paddy is hulled with the small laboratory apparatus; the proportion of breakage is also noted; the resistance to lodging and disease is observed during the course of growth in the different generations.

If the homogeneous strain shows adequate qualities from these different points of view, a new variety is established and entered in the pedigree register. It is then sent into other rice growing regions for tests of adaptation. In this way variety 39, created by ORLANDI at Bologna, was spread at Mantua, in Romagna, Lombardia and Piedmont.

German geneticists prefer to cultivate all the hybrids en bloc during a certain number of generations (7 or 8). As the proportion of heterozygotes diminishes each year, by removing a certain number of plants at this moment, there will be among them a greater proportion of homozygotes. But a much greater number of years are required for a variety to emerge by this method for, in addition to these 7 or 8 years, it is necessary to observe for several years more the homogeneity and qualities of the isolated strains. Further, as from the 3 or 4 generations cultivated on bloc it is impossible to sow all the grains, part must be discarded with the consequent risk of eliminating strains which might have been valuable.

In the method of Dr. ORLANDI elimination is also practised since from the  $F_3$  one samples only certain stools in the heterogeneous plots. But this sampling is made with discrimination, whereas in the preceding case it is effected by chance.

Dr. ORLANDI conducts two or three crosses of rice simultaneously, so that after the  $F_3$  there are 600 to 700 plots to observe.

For wheat he conducts up to 40 hybridisations simultaneously, sometimes keeping under observation 100,000 plots.

He has observed certain cases of natural hybridisation in rice. Sometimes at the opening of the flower the stamen emerges and remains straight for a moment before opening. If there are plants in the vicinity and no wind the flower is in an absolute bath of pollen, and natural crossing may be produced.

## B. — Genetic Improvement.

(Methods of the Station of Vercelli, Dr. CHIAPELLI and Ing. SAMPIETRO)

The methods employed are in the main the same as at Bologna. We shall indicate only the points in which they differ and the special investigations of Vercelli.

## 1. — *Hybridisation.*

This is here also the principal method of improvement. The technique is the same, but castration is carried out the same morning that flowering will take place, that is about 9 or 10 a. m. if the flowers will open towards mid-day. The stamens are then removed, their length being already more than half that of the glumes. The stamens are torn out carefully one by one with forceps, for, if several are taken at a time there is more risk of breaking open the anthers and liberating the pollen sacs. Dr. ORLANDI holds that by this method there is risk of a certain amount of self-pollination. It is evident that if the method that he recommends gives an equal percentage of success it would be preferable.

In squares in which variability continues after the  $F_3$  one stool is selected for its qualities (resistance to lodging, absence of spots of fungal diseases, grain free from opaque spot). It has been remarked to me with reason that it would be better to start from one ear, or better still one grain. A whole series of Vercelli hybrids have grain giving high grade milling rices, comparable in appearance with the best American "Lady Wreight" or "Blue Rose", but from the point of view of flavour it seems to me that we have in Indochina rices (such as the "tam thom" and "tam xoan" of Tonkin, for example) with flavours superior to the best Italian rices. It is desired to improve the external appearance, which alone counts on the market, rather than the flavour. The people of Annam, on the other hand, know the different flavour values and it is on these that the market rates, for home consumption at least, are based.

Crosses between wild and cultivated rices are also used, on account of the great vigour of growth and great resistance to "blast" of the wild rice. But, as the production of wild rice is negligible and the grain is shed before maturity, useful rice can be obtained only by mixing "Originario" and wild rice in a proportion of  $3/4$  to  $1/4$ . A long time is necessary for a fixed homozygote to emerge, most of the characteristics of the wild rice being dominant.

## 2. — *Acclimatisation.*

The rapid increase in the average yield of the Italian rice fields (18 quintals in 1895, 50 quintals in 1930) is due mainly to the success, exceeding all expectations, of certain imported varieties. Hundreds of varieties have been introduced from nearly all the rice growing countries of the world and at the beginning of the XXth century the growers changed the variety almost every year. But soon they limited the varieties, using only the best: firstly "Chinese Originario", imported from Asia in 1904 with many other varieties, the exact place of origin being unknown. It is the most widely spread variety, although its cultivation is beginning to diminish; it has made it possible to produce yields of upwards of 80 quintals, such as had never been obtained with the old Italian varieties. But this variety is accused of lacking resistance to diseases, especially to "blast". It would seem that resistance was higher when it was first imported.

It is the "Americano 1600", a variety of Japanese origin imported from the United States, where it had become acclimatised, that tends to replace the "Originario". Its straw is shorter; it is more resistant to lodging and disease and gives a better yield at the mill than the "Originario", although the yield in paddy is sometimes a little less.

Recently the "Benloch" has been successfully imported from Spain, which is still more resistant to lodging and disease than the "Americano".

Acclimatisation tests are being continued at Vercelli where there is a collection of rices from South and Central America, the United States, Madagascar, Japan and even Indochina. These last do not ripen in the climate of Piedmont. One Japanese rice, the leaves of which are completely free from disease spots, will be used for hybridisation on account of this exceptional resistance.

The most noteworthy varieties are the "Bombilla", the "Benloch" No. 3 (Sueca selection), the "Wary Lava" of Madagascar (too late), the "Blue Rose" and the "Lady Wreight" of the United States.

Sig. SAMPIETRO thinks that all varieties tend to lose their qualities of resistance to disease (specially to "blast") after a certain number of years of cultivation in Italy. This is an experimental fact, which is perhaps explained by cultivation in a very rich soil. For this reason new imported varieties are needed and will continually be needed. And it is to obtain resistance to disease by another means that a series of hybridisations with wild rice is being begun.

### 3. — *Hereditable modifications by the action of a magnetic field, light, etc. on the pollen.*

Similar experiments to those of Dr. PIROVANO of Rome (see the *Monthly Bulletin of Agricultural Science and Practice* of the International Institute of Agriculture, August, 1932) have been carried out at Vercelli. A rice plant grown in a pot is put to flower between the two poles of an electro-magnet, or under a light of greater or less intensity, sometimes reaching 20,000 lumens. Modifications have been obtained; different individuals of the same strain, submitted during flowering to lights of differing intensity, showed afterwards great variations, in size, for example.

Though these modifications have a certain scientific interest, no practically utilisable improvement has yet resulted. But the experiments are still at an early stage: it is too soon to draw conclusions.

## C. — Fertiliser experiments at Vercelli.

Parallel field experiments and pot experiments are carried on with the same programme.

### I. — *Field experiments.*

Each trial plot consists of about 500 square metres surrounded by a bank with an irrigation and drainage system allowing of directing water separately into each plot or removing it. The experiments are concerned with the three

principal fertiliser elements, also lime, iron sulphate, farmyard manure, alone or mixed with the others, applied in the following amounts (quintals per hectare) :

Sulphate of ammonia at 20 % N. . . . .	3	} or 60 kg. of nitrogen
Cyanamide at 15 % N. . . . .	4	
Superphosphate at 16 % $P_2O_5$ . . . . .	8	or 128 kg. $P_2O_5$
Potassium sulphate . . . . .	3	or 150 kg. $K_2O$
Ground limestone . . . . .	12	
Iron sulphate. . . . .	2	
Farmyard manure . . . . .	40	

In certain experiments mixtures with half or double the amounts indicated above are tested. Each treatment is repeated twice, and there are only two control plots for the whole experimental field. This field is cultivated according to the normal practice of the region. At the harvest the whole of each plot is cut without eliminating the edges, as it is considered that their influence is the same for all the plots.

These experiments aim more particularly at determining whether the heavy dressings of superphosphate that are applied in the region are genuinely useful. There is a tendency at the Station to think that nitrogenous manure is the only kind which is indisputably useful in every case.

In these rich soils the aspect of the field a little before maturity does not reveal appreciable differences between the different plots. It is intended to prolong the trials at least for 4 years, and more if at the end of this time there are not to be seen clear differences between the plots submitted to the various treatments. Soil reserves may compensate for a long time for the absence of a dressing of fertiliser.

## 2. — *Pot experiments.*

A pot experiment corresponds to each field, it is repeated twice with soil and twice with sand. Differences in growth are much more noticeable with the sand.

The receptacles are zinc boxes of  $15 \times 17 \times 20$  cm. (height 20). The soil is levelled at the end of growth to 5 or 6 cm. from the edge. The soil used is mixed several times, then the same weight is put into each pot. Each pot receives three previously germinated grains which give three plants ; all are placed as nearly as possible in the same conditions (water, light, etc.).

In each pot the state of the plants at the different stages of growth is noted, then at the harvest, the height of the plant, the number of ears, the weight of grain and the weight of straw, including in the latter the crown and the beginning of the roots since the plants are pulled up by hand. Finally the different paddies are chemically analysed.

The fertiliser elements are supplied in the same proportions as in the field, to one quintal per ha. corresponds a dressing of 0.326 gm of fertiliser per pot.

In addition to this series of experiments certain formulae of complete fertilisers are tested at the request of the producers.

No trials are carried out with organic manure (farmyard or green manure) because Italian agronomists, who recommend it in all their publications, consider its utility indisputable, except perhaps in the rice fields of Aemilia and Venezia which are formed of recent alluvial soils.

## II. — INDIA.

### *Coimbatore Station, Presidency of Madras*

(K. RAMIAH, Paddy Specialist)

#### A. — Genetics.

A collection of the varieties grown in the Presidency of Madras was first constituted : 800 varieties have thus been collected at the Central Station of Coimbatore. Genetical improvement is carried out in this Station for the varieties cultivated on an area exceeding 2000 acres, for the less common varieties in the local Sub-Stations (Aduturai for the delta of the Caverry, Maruteru for the delta of the Godavery and of the Kistna, Pattambi for the Malabar coast. Another will shortly be formed for southern Kanara).

#### I. — *Pure line selection.*

In the populations the most cultivated 200 plants are isolated and the progeny of each of these individuals are cultivated separately. The genetic characters of each family are studied, duration of growth, height, characters of the flowers and grains, colour of the kernel, etc. The first year of cultivation brings about the elimination of quite half these lines, namely, all those which are found to be inferior in vegetative characteristics and more particularly in resistance to diseases and capacity of production. The others are examined in the laboratory ; a study based on measurements results in a second elimination. For the following generations one takes grains from the plants situated in the centre of each small square, for in pedigree selection the flowers are never protected from foreign pollen. For the plants cultivated side by side trials have shown that the mean percentage of natural hybridisation is below 0.5 %. It is considered that elimination of the edges (and of the lines which eventually produce variants) is sufficient precaution in addition to the usual precautions for avoiding mixtures in the course of the work.

The second year one cultivates the lines retained in squares of 1000 plants, the yields of which are measured and compared with that of the original population. After this test only the 30 or 40 best are kept. These are submitted to comparative trials of yield carried out over three years in order to obtain a trustworthy result, independent of special weather influences. The best of the progeny are bulked in the farms which sell back their whole crop to the Station.

The strains selected at Coimbatore find favour with the growers, who agree to pay for the Station's seed 25 % above the average rate for paddy ; 1 % only of the demands for grain can be satisfied. The strains are marketed preferably in the region of cultivation of the populations from which they were extracted,



but the selection is often made in conditions which differ considerably from the original environment.

The paddy being produced solely for local consumption (India importing much rice) the selector is concerned mainly with yield. It is different in Burmah where the rice mills refuse paddies which do not possess the qualities required by the market.

## 2. — *Acclimatisation.*

Varieties have been introduced coming from other regions of India and from various foreign countries. They have never given results superior to those of the local varieties or those selected on the spot, neither has it been endeavoured to promote their cultivation. But certain of these show interesting characteristics and have been retained as parents for hybridisation.

## 3. — *Hybridisation.*

It is at Coimbatore, in Java and in the United States that the study of the heredity of the characters of rice and the attempt to establish the "genetic formula" of each variety have been carried furthest (see on this subject the studies by K. RAMIAH indicated in the bibliography). For a long time hybridisation has been used for the formation of new varieties. Two methods of cross pollination are used, the second which has been developed recently is a very original method.

(a) *Classical method.* — The overlapping glumes are loosened with forceps two hours before the normal time of flowering, taking care not to break off these highly delicate organs, and they are held apart at an angle of 30°. The stamens are removed, taking hold of them by the filament (not by the anthers, there being less risk of tearing the pollen sacs in this way) with forceps sterilised after each operation. These castrated spikelets are wrapped in muslin bags extended by three sticks in a triangular prism open below. Pollen never rises and the opening allows of the free transpiration and respiration of the panicle. If completely enclosed in a paper bag it would very soon rot. They are left thus until the flowering of the male parent, all arrangements being made so that it may take place the same day. The dehiscing anthers are shaken over the castrated spikelets that are again opened (1).

From this time they are no longer bagged as before, because it is thought that this would hinder the development of the grain and that risk of pollination by another pollen no longer exists.

This process is satisfactory with varieties having large spikelets. One expert can make 30 to 40 cross-pollinations in a day of 4 to 5 hours' work with a per-

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(1) The panicles intended to supply the pollen may, for convenience, be detached from the plant a little in advance, on condition that they are sheltered from the sun and the stems placed in water

centage of success which may reach 80 %. But the manipulation of the glumes of the varieties with small spikelets is very delicate, the proportion of success falls to 20 or even 10 % and the work is tedious. For these varieties a more practical process has been sought.

(b) *Process used for small-grained varieties.* — By studying the time of flowering and the factors which make it vary it has been found that an artificial raising of the temperature hastens the opening of the glumes and that this rise of temperature may be easily produced in practice by wrapping the panicle, which is left in the sun, in a bag of dark coloured paper (brown or black).

It is a remarkable phenomenon that in every case in which the opening of the glumes has been accelerated in this way the anthers emerge from the flower without dehiscing, the factors regulating the opening of the flowers being independent of those which govern the opening of the anthers. The following technique has therefore been developed :

One chooses a panicle which began to flower the day before (the maximum proportion of opening of a panicle taking place during the 2nd and 3rd day of flowering) and one removes all the spikelets already flowering. The panicle is wrapped in brown packing paper one hour or one hour and a half before the normal hour of flowering, which may be foretold according to the weather; the panicle and paper bag are held in position by a stake fixed in the mud of the rice field beside the plant. The bag is removed after a quarter or half an hour according to the intensity of the sun. All the spikelets which would have opened during the day are opened. The non-dehiscent anthers are removed and pollination is effected as soon as the male parent plant is in flower. Then all the spikelets on the panicle which are not open are removed.

This very rapid method is particularly valuable in the case of biological research requiring many cross pollinations, such as studies of the duration of fertility of the pollen, or of the receptive period of the stigma. It may be carried out by a beginner. Each of the grains obtained is sown and cultivated separately with great precautions. The following year (F<sub>2</sub>) the grains coming from each plant are sown separately and the plants are planted out one by one in a small square, 1 ft. apart. The characters of each plant are studied individually, and the two parents are planted by the side of the hybrids so as to be able to follow the inheritance of the characters, their combination and segregations. Certain hybrids show characters of one or the other parent, or intermediate between the two, or more pronounced than in the parents (earlier or later ripening than the earliest or latest parent, etc.). By making crosses between the " native " varieties with white, red and black kernels, varieties have been obtained of which the kernels show a whole gamut of yellows, gold, greens, even blues.

When in the following generations some individual appears to show a combination of interesting characters it is isolated and cultivated until it is fixed, and is submitted to the same tests of comparative culture as the pure strains for three years before multiplying it in bulk. If a pure line can be produced in six years at least seven to ten are required to produce a new variety by hybridisation.

## B. — Fertiliser Trials.

## 1. — Green manures.

In southern India few regions are sufficiently favoured by rainfall to be able to give two crops (if there are two crops there is generally a season of quick growing rice sown in the field, followed by a more slow growing transplanted rice). In the region of Coimbatore there is only one season which begins, according to the locality, from June to September. The first rains, which are rather irregular, normally admit of the cultivation of a green manure, sown about April and dug in just before transplanting (July or August). It is necessary to choose a variety resistant to drought and capable of giving in three or four months a great mass of green matter. *Crotalaria juncea*, *Tephrosia purpurea*, *Sesbania aculeata*, *Phaseolus trilobus*, are cultivated.

*Crotalaria* and *Phaseolus* may also be used for feeding livestock and form a valuable reserve at the end of a dry season. Green manure is sufficient in many cases to produce satisfactory crops on condition that the rains are regular.

## 2. — Phosphatic fertilisers.

This is the only mineral fertiliser which gives results. Superphosphate is used (at the rate of 40 lb of  $P_2O_5$  per acre) and sometimes natural phosphates. Nitrogen and potash are never used. In the fertiliser trials the efficacy of the different forms of phosphoric acid are tested and supplementarily that of ammonium sulphate and ammonium phosphate for poor regions in which the cultivation of green manures is difficult. But potash, which was used at the beginning, has been definitely eliminated from the trials.

## III. — CEYLON.

*Paradeniya and Anuradhapura Station*

(L. LORD, Economic Botanist).

## A. — Genetics.

The studies are much less advanced than at Coimbatore and it is considered that the possibilities of improvement by genetic selection are still so great that it is not necessary for the moment to endeavour to produce new varieties by hybridisation. There are in Ceylon four rice research stations (Paradeniya, Anuradhapura, Labuduwa and Wariyapola) and numerous experimental sub-stations. Most of the selection is carried out in the four principal stations; but as the diversity of environmental conditions existing in the island cannot be realised part of the strain is isolated in the sub-stations and all are submitted to comparative yield trials in situ in the sub-stations of the region in which it is desired to propagate them.

### 1. — *Isolation of lines.*

Out of the population one chooses a hundred panicles (until recent years only 50 were used), partly at random and partly on plants showing interesting characters. The following years, sometimes the following season (1), the grains from each lot are sown separately and the plants transplanted either in rows (rod-row, 16 ½ ft) or preferably in squares of 1000 plants (10 rows of 10 plants) or, if there is sufficient rain, of 144 plants (12 rows of 12 plants of which only 100 are kept, the first peripheral row being eliminated during harvest); the squares are rapidly planted out with the help of transplanting frames. A little before flowering each square is surrounded by a cord to prevent the plants of neighbouring squares overlapping by lodging. The squares are separated from each other by a space one yard wide, and it is thought that these spaces and elimination of the edges and of the lots which show variants are sufficient precautions (2). At harvest time the mean yield of each strain is calculated per plant and per fruiting stalk and the ten best of each category (or 20 at maximum) only are retained. This elimination is considered somewhat severe but one cannot do otherwise for lack of space.

The second year the lots retained are sown, then transplanted plant by plant, either in rows or in small squares as before, or, if there is space, in plots of about 6 × 6 m. The yield and other characters of each strain are observed. After this crop only 5 or 6 are retained and these are sent to the sub-stations.

### 2. — *Comparative yield tests.*

These are always carried out, as has already been said, in the environment in which it is hoped to propagate the selected seeds. Each strain is replicated six to ten times on plots scattered at random in the whole fields of 1/100 or 1/200 of an acre. Whenever possible 1/100, and even some times 1/80 of an acre, is used; but the space available in the Stations is always limited. An edge of one foot or a little more in width is eliminated and the standard error of the results is calculated. The yields of these small plots and of the normal fields are compared to test whether the results are trustworthy or whether the differences are excessive. Even the yields of the preliminary tests in rows of 5 metres or in squares of 100 plants differ only very slightly, according to the results obtained, from the yields in the field. In districts where rice is cultivated in terraces on steep slopes the plots are so small (we have seen many of only a few square metres) that comparative trials are not practically possible. At the beginning of the investigations the comparative trial plots were planted out plant by plant. But the damage done by crabs (*Paratylphusa*, *Ozietelphusa*, *Hydrodromus*) made it necessary to

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(1) When the rains or irrigation permit of two crops of transplanted rice per year the same variety may be used for both seasons. But in the majority of the rice fields with two crops the "maha" rices or rainy season rices are different from the "yala" or dry season rices which are sown in the field (growing season "maha" 6 to 7 months, "yala" 4 to 5 months).

(2) Later the purity of the strains whose high value has been recognised is preserved by isolating each year with muslin one plant of this strain during flowering. If the grains of the rest of the strains are found to be impure (mixed or naturally crossed) they are eliminated and only those coming from self-pollinated plants kept carefully separated are retained.

give this up. With three plants per stool there was an average of only 2.6 % of gaps as compared with 10.9 % with one plant. At Paradeniya we have seen fertiliser trial plots in which crabs had caused the loss of a good third of the plants.

### 3. — *Propagation of the lines.*

To begin with the seed of the best lines was propagated by the growers immediately after these comparative tests. It is now considered that it is better to study first the possibilities of adaptation in different conditions. Some lines which give excellent results at the Stations do not succeed in the neighbouring fields which are very badly cultivated. Ceylon is one of the rice growing countries in which the yields are lowest; the mean yield per hectare is below that of India, which is itself below that of Indochina. In many districts 6 to 8 quintals per hectare are considered a normal production. The Cingalese plough passes through the soil like a large knife; weeds flourish. The introduction of the primitive Burmese harrow which has been tested at Peradeniya would be considered as a great progress. The agronomists of the Botanic Service discussed whether they should carry out selection in ground well or badly cultivated, in favourable conditions or in the normal conditions of culture. They decided on well cultivated soils, considering that they are working for progress, for a future in which they hope that the land will be better cultivated (1).

### 4. — *Mixtures of lines.*

Since 1929 a comparative study of the yield of pure lines cultivated alone and of mixtures of these lines has been begun. Up to the present the yield of the mixtures is intermediate between that of the best and of the worst lines of which it is composed. Thus mixing has no influence.

## B. — Fertiliser trials.

### 1. — *Green manures.*

Experiments in growing green manures in rice fields for ploughing under have not been very encouraging. *Crotalaria juncea* would seem preferable in land of medium humidity. This is of little value in Ceylon where rice occupies only a small fraction of the land; there is generally a large variety of plants available on neighbouring land. Moreover green manure is mainly used in the rice fields giving two crops, in which there is not the necessary time to grow it; in the rice fields giving one crop it is generally considered that digging in the weeds which have grown during the fallow period supplies sufficient plant debris.

The investigations concerned with the digging in of a very widely spread Composite plant (*Tithonia diversifolia*) have shown:—

(1) That it is necessary to dig in the green manure just before sowing (or transplanting); or, if one is obliged to do it earlier, the land must be kept

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(1) We do not share this opinion. It would be better to select with a view to the present conditions of culture.

covered with water until it is sown in order to avoid the nitrification which would cause both loss of nitrogen (by leaching), and the production of toxic nitrates, the water of the rice fields being generally a reducing medium. Rice can absorb the greater part of the nitrogen which it requires in the ammoniacal form ;

(2) that the optimum dressing is one or two tons of green matter per acre (2.5 to 5 metric tons per hectare). With five times as much green matter (5 tons per acre) a gain in yield has been obtained of less than  $2\frac{1}{2}$  times higher (12 and  $28\frac{3}{4}$  bushels of 48 lbs per acre, or 6.5 and 15.6 quintals per hectare) (1).

(3) The use of green manure is indicated in most of the rice fields giving two crops, and in poor rice fields giving one crop wherever the cost of cutting and transporting the green material is not prohibitive.

## 2. — *Mineral fertilisers.*

Phosphoric acid is considered the most important fertiliser element and the form preferred is the superphosphate, in the proportion of 1 cwt of ordinary superphosphate (40 to 60 %) per acre ; this is the only fertiliser supplied to the rice field giving luxuriant growth. In poor rice fields it is sometimes useful to add nitrogen, and for this purpose a phosphate of ammonia is used ; but, particularly in the latter classes of soils, it is particularly recommended *never to supply mineral fertilisers without organic fertilisers* (green manure). It is recommended to apply the green manure the day before the rice field is sown or planted.

Superphosphate in the amount indicated above gives an average gain in yield of 25 % the first year and 12 % the following years.

Potash has never given any appreciable result and the conclusion reached is that this fertiliser is of no value in the rice fields of Ceylon. Out of 12 series of experiments potash is still applied in 2 series ; it increases the yields as often as it reduces them.

The use of phosphatic and nitrogenous fertilisers was generally only just profitable in 1929, without taking into account the interest on the money and estimating the paddy at the high rate of 2 rupees to the bushel of 21.5 kg. (or at 9 francs to the rupee and at 12 francs to the piastre, 83 francs or about 7 piastres to the quintal of paddy).

## 3. — *Technique of experimentation.*

The fertiliser trials are carried out on plots of  $\frac{1}{80}$  acre and the crop after eliminating the edge is taken from  $\frac{1}{100}$  of an acre ; each treatment is repeated 4 times and the standard error is calculated.

At Anuradhapura in 1929, a series of measurements were made to verify the uniformity of the 8 plots of the Station, each of  $\frac{1}{5}$  of an acre (8 ares). There were great variations in yield both between the plots and in the interior of a

(1) Cf. the results with *Crotalaria striata* at Tonkin : five tons to the hectare give a gain of 6.5 quintals, and 10 tons of 9 quintals ; the increase in the yield here also is "less than proportional"

single plot, which shows the necessity of a correct technique of experimentation. The yield of the plots of 8 ares varied from 290 to 589 lbs for the grain and from 488 to 732 lbs for the straw.

The zone situated along the edge of the irrigation canals, drainage dykes or the banks dividing the plots always gave a yield above the average; they have therefore been neglected in the following calculations.

The standard errors of the plots of different dimensions were as is shown in the following table.

Dimensions of plots	Standard error expressed in % of the average		Direction of plots in relation to the irrigation canal
	Grain	Straw	
10 × 10 ft = 1/436 acre . . . . .	20.1	19.7	Parallel to the canal.
10 × 50 » = 1/87 » . . . . .	9.8	11.2	
10 × 50 » = 1/87 » . . . . .	16.7	15.0	Perpendicular to the canal.
20 × 50 » = 1/44 » . . . . .	8.8	9.6	Parallel to the canal.
40 × 50 » = 1/22 » . . . . .	7.8	8.9	

The standard error was smaller in the plots parallel to the irrigation canal than in the plots perpendicular to it, but it must not be taken for granted that the same would be the case under all conditions.

The increase in the area of the plots reduces the standard error until 1/87 of an acre; but beyond this figure the reduction of the error was non longer correlated with the area. In practice, therefore, when the land is already divided into small plots and there is available only a small area for experimentation – as is the case here – trial plots of 1/87 acre may be regarded as adequate.

#### IV. — INDOCHINA.

##### *Office Indochinois du Riz.*

(M. DEVISME, Director).

##### A. — Preliminary studies.

A systematic study of the soil by analysis of samples taken at the intersection of meridians and parallels 10 kilometres apart on the map is now in progress in Cochinchina and in the delta of the Tonkin; it will later be extended to Cambodia and North Annam. The soil analyses are made according to the technique of the laboratories of Java. A parallel study of the hydraulic system and meteorology of this region is being carried out.

These researches will make it possible to divide Indochina into the natural ecological regions of most interest as regards rice growing, having common characteristics of soil, climate and hydraulic system. An experimental field for testing fertilisers and varieties will be established in each region and it is considered that the results obtained in these fields will be applicable to the whole region.

## B. — Genetics.

(M. CATY, Chief of the Genetical Laboratory).

In each natural region an enquiry has been made concerning the varieties now cultivated. The principal points of this enquiry are :

Name, area of cultivation, origin of the variety. Suitability to cultivation in high or low, old or new rice fields.

Resistance to drought, to inundation, to salt water, to pests and diseases, to lodging and to shedding.

Dates of culture, duration of growth, spacing for transplantation tillering, yield, with and without fertilisers.

Commercial type of the rice produced.

The samples collected in the course of the enquiry have made it possible to establish a field of varietal trials in each of the ecological zones provisionally established while waiting for the agrological map. Each variety is grown on 5 plots of one are scattered about the experimental field ; transplanting is effected plant by plant. The time of sowing is that specified by the growers who supply the seed and the normal conditions of culture of the region are adopted.

During growth studies are made on 20 plants for special observation of germination, the aspect of the plants in the nursery and after transplanting, tillering, flowering, attack of pests and diseases, lodging and in general all observations allowing of the determination of the good qualities and defects of the varieties. The homogeneity is particularly noted and the plants noticed as being distinct from the rest of the plot are marked so as to be able to keep them separate at the harvest.

At the same time a morphological description of the varieties is made, based on the colour, bearing and aspect of the foliage at different seasons, the characteristics of the stem, of the ligule, the ear, the height of the plants, the aspect of the panicle.

This description is completed by a study (measurements and description) of the grain and kernel, made in the laboratory from botanical and technological points of view. This latter study is of most interest for the rices intended for export and should result in the elimination in the crops intended for this purpose of all the inferior sorts. But for the rice intended for home consumption, flavour will always be regarded by growers as the character of primary importance; even the yield factor taking in this case the second place. A card index indicating the commercial characteristics of the rices supplied by the different varieties of paddy is in course of execution.

A comparative study of the yield of these varieties in their normal cultural environment has been begun. The work of genetical improvement properly so called (pedigree selection, hybridisation, study of mutations) has been undertaken on the varieties which the preceding studies of yield and technological and cultural qualities show to be of interest.

## C. — Fertiliser Trials.

The principal work is concerned with the possibilities of using mineral fertilisers. The experimental programme adopted compares the following applications of each of the three principal fertiliser elements: 0—17kg—33kg—50 kg



of nitrogen, phosphoric acid or potash per hectare, and all the possible combinations of these amounts. The nitrogen is supplied in the form of sulphate of ammonia ; phosphoric acid in the form of the local natural phosphates; potash in the form of potassium chloride. Each test is repeated on 5 plots and the value to be assigned to a difference between two fertilising formulae (mean of the 5 plots of each series) or between one fertiliser formula and a control is calculated in accordance with the ratio of this difference to the probable error of the difference, calculated on the formula of BESSEL. Each experimental plot has an area of 2 to 3 ares. The observations during growth and harvesting are carried out with the greatest care. Supplementary tests allow of the determination of the relative values for the same fertiliser element :

- sulphate and chloride of potassium
- local natural phosphate and Tunis phosphate
- sulphate of ammonia, cyanamide and urea.

In the Delta of the Tonkin other research is concerned with the optimum time for spreading the nitrogen, the course of absorption of phosphoric acid, and the use of green manures alone or associated with mineral fertilisers.

The first results obtained allowed the following conclusions :—

(a) Except in the case of rare exceptions *the use of mineral fertilisers is not economically practicable*, even if the recent fall in the price of paddy is not taken into account.

(b) The two fertiliser elements which are most deficient are phosphoric acid and nitrogen ; potash is rarely useful.

#### D. — Discussion of the Technique of Research.

##### 1. — Genetics.

As we find ourselves faced with populations, that is, mixtures of individuals of different hereditary qualities, the most urgent work seems to be to produce pure lines from each, beginning with those which have been proved particularly interesting by the preliminary studies. With these lines one might proceed (1) to comparative studies of yield which would have more value than those now made on populations, which are complexes of types reacting differently according to the environment in proportions which cannot be foreseen.

But as regards the propagation in culture of selected seeds, the failure in Java and Cochinchina of pure lines incapable of adapting themselves to an environment slightly different from that in which they were selected, should be remembered. As to-day all scientific value is denied to mass selection it would seem that one should aim at the cultivation of mixtures of closely related lines which are more plastic than pure lines. Such are also the conclusions of the Fourth Scientific Congress of the Pacific held in Java in 1929; and in his recent thesis on wheat M. BOEUR upholds a similar idea for this plant.

Pure lines would be useful for the morphological description of the varieties ; measurements of grains and kernel, for example, will not be of definite value if

(1) As indicated by M. CATY.

they relate to populations. We had begun this work of description for the varieties grown in the Delta of the Tonkin following the model description given by COPELAND in his book *The Rice*, chapter "Seeds and Varieties of Rice", but we were obliged to give it up before having established another model of description. We found that many of the characters indicated by COPELAND depend more on the environment in which the variety is cultivated than on its hereditary qualities properly so called. Thus "the proportion of fine and large roots, their length of penetration" depend on the proportion of sand and clay in the soil, on its fertility and the methods of irrigation; "the length, the weight and the texture of the third leaf from the top" are correlated with the richness of the soil in fertiliser elements and particularly in nitrogen. In our comparative yield trials, with and without complete fertiliser (research concerning varieties utilising the fertilisers well), we found a general increase of 5 to 10 cm., sometimes more, of "the height of the plants" in the fertilised plots. The characters of "pigmentation" have more value (although they were reduced or suppressed on the stem by cultivation in deep water in our experiments on resistance to inundation), also those of the ligule, of the panicle and of the grain (especially the ornamentations of the glumes). The nearer one approaches to the grain, the reproductive organ, the more the morphological characters appear to depend on variety and the less on environment, but there is not at the present time, to our knowledge (and this is a gap that requires filling), any study in which the relative influences of environment and of variety on the morphological aspect of the different parts of a rice plant have been clearly differentiated.

Finally, the study of varieties in their ecological environment should not lead us to neglect the interest which is offered by the acclimatisation of varieties coming from neighbouring regions or from foreign countries. Rice growers of Tonkin have several times obtained success when cultivating varieties coming from other provinces of the country or from the adjacent Delta of the Than-Hoa. The example of Italy where are now grown only varieties which were unknown until some decades ago, shows us the interest of these importation trials. Varieties should be introduced preferably from countries in which the climate and other conditions of culture do not differ too much from those of the region into which they are to be introduced.

Foreign varieties which do not present a sufficient total of good qualities to enable their cultivation to be recommended may be retained as parents for hybridisation when they show a valuable characteristic carried to a high degree (e. g., resistance to lodging of the Japanese rices).

## 2. — *Fertiliser trials.*

It has already been said that the researches carried out up to the present have been concerned mainly with mineral fertilisers. The problem of green manures is now being undertaken but the principal place is always given to the trials of chemical fertilisers. The economic impossibility of the use of the latter would appear to be sufficiently demonstrated so that the first place may be assigned, as in India and Ceylon, to researches on organic fertiliser in its different forms: natural manure where there is abundant plant and animal refuse, artificial manure

where there is no livestock, green manure where plant refuse is scarce or used for other purposes (rice straw serving, as in the Delta of the Tonkin, as livestock feed or fuel). Even if the economic conditions changed to such an extent that one could view the possibility of the use of chemical fertilisers, it would be to the association “ *organic manure-mineral manure* ” that one would turn. The problem of humus, which is so rapidly destroyed in tropical climates, is as important in rice cultivation as for other crops (rubber, coffee, tea, etc.), for which investigations concerning green manures have been developed to so great an extent.

The success of *Crotolaria striata* at Tonkin (cf. *Riz et Riziculture*, Vol. 6, fascicules 1, 2) emphasises the importance of the results that may be obtained on the subject.

The study of mineral fertilisers might be carried on leaving potash deliberately out of account as its rôle seems here, as in India, quite secondary (except perhaps in the two or three localities in which it seems to give results), and studying for nitrogen and phosphoric acid :—

the best form in which to apply the fertilisers ;

the optimum amounts and times of use.

Fertilisation of the nursery plantations would be economically possible if they were found technically useful, since it would be concerned with very small areas (1/15 to 1/20, on an average, of the area of the rice field).

Sulphate of ammonia would seem to be the best source of nitrogen, except perhaps in very acid soils, although rice flourishes with a very low pH (below 4). As regards phosphoric acid there is a hesitation between superphosphate and the natural phosphates of Tonkin or North Africa. It seems practicable to reserve the natural phosphates for acid soils and to use superphosphates elsewhere. But as these conclusions are based on too small a number of experiments it would be necessary to continue research further on this point.

### 3. — *Decentralisation of research.*

Division into natural regions is indispensable, but it is unwise to aver : “ it is considered that results obtained on the experimental field are applicable to the whole of the region ”. Superphosphate gave extraordinary results during the rainy season of 1931 on the experimental field of Binh-An (province of Thai-Binh, Tonkin) : a gain of 9 quintals of paddy per hectare with 40 kg. of  $P_2O_5$ , whereas at the rice station of Thia-Binh, two kilometres distant, in the same conditions of soil (sandy soils formed by erosion of ancient sea coasts) and of water system (at the limit of the flood zone), superphosphate gave no result. One may say simply that there is more chance that the results will be applicable in the same natural regions than elsewhere.

The truth is that the experimental fields can give only probabilities to the grower and can indicate, if he wishes to experiment with the use of fertilisers, those which may be tried with most chance of success. He must, here as in Europe, himself undertake an experiment following a very simple programme.

If the greater part of the researches on varieties and fertilisers must be made by natural regions, the formation of a Central Research Station for each great rice growing country (Cochinchina, Tonkin) would be very useful. In India,

the Coimbatore Station has as its radius of action (for rice) the Presidency of Madras, which is much more vast and varied in conditions of culture than Cochinchina and Cambodia together.

At this Central Station might be concentrated part of the studies of genetics (collection, identification and description of varieties, hybridisation, mutation, study of the heredity of characters and correlation), of the biology and physiology of rice (pot experiments, study of the progress of absorption of the fertiliser elements and of the water system in the rice fields, etc.) and research on the improvement of the material and of cultural methods (preparation of the soil, harvesting, etc.),

This expression of an opinion in slight disagreement with the methods of experimentation does not prevent us from recognising with appreciation the persistent and fertile efforts of our colleagues of the "Office Indochinois du Riz".

#### V. — COMPARATIVE EXPERIMENTS AND THE STATISTICAL METHOD.

We consider that too great a value should not be attributed to the discussion of results by means of the probable error. The calculations of probabilities, let us not forget, is trustworthy in the case of averages of a great number of results (several hundreds or several thousands, as in the case of measurements concerning stars) and when the distribution of the errors on this or that side of the average is due to chance. It is necessary to have a somewhat great number of repetitions to be able to construct QUETELET's curves of variation of yield. In the trial fields the averages are based on five to ten observations and there may therefore arise systematic error in a single direction (for example, a belt of soil of different fertility).

Some examples taken from the report of fertiliser trials in Cochinchina in 1930 to 1931 (*Bulletin Economique de l'Indochine*, Hors série B, 1931) show us to what conclusions the statistical method may lead (1).

On the same experimental field the probable error of an average of results varies greatly: from 1 to 9 at Chipou (p. 76, the probable error varies from 0.11 to 0.97), from 1 to 14.5 at Dong-Son (p. 88, from 0.32 to 4.63). It is permissible to question whether on the same experimental field one result has a probability of precision 14 times greater than another. There is an element of chance in the fact that one average is drawn from very divergent results and the other from very closely similar figures.

If a first result may be rejected on the strength of a very high probable error we do not admit a great probability of the second being accurate. It is certain that if the number of repetitions had been higher there would have been less difference between the probable errors. It is these differences which make it possible to draw the conclusions against which we are arguing. Considering that a difference between the results of two fertiliser formulae, or of one

(1) It is understood that we are not criticising the methods of the agronomists who have carried out the experiments but are using this example to demonstrate the wrong use of the statistical method in agronomy.

fertiliser formula and a control, is significant when it is more than three times the probable error of this difference, one is led to acknowledge the significance of differences of yields in paddy of 2.07 kg. (p. 75) or of 2.12 kg. (p. 78) per plot of 2.15 ares (differences below 1 quintal per hectare, the yield of the plot studied varying around 16 quintals), whereas a difference of 3.95 kg. (p. 74), nearly double the preceding, is considered as "without significance". This last difference was that of two results affected by high probable errors (1.74 and 0.89), whereas for the first they were much less (0.39 and 0.48 in one case, 0.34 and 0.46 in the other).

For the same reason in the experimental field of Phu-Loc (p. 61), the difference in yield of 9 kg. on five ares (1.8 quintals per hectare) is considered as significant and another of 15 kg. (3 quintals per hectare) as without significance. Some similar examples may be noted in the results of the experimental field of Dong-Son where the experimenter had reason to say: "Comparisons between the yields have been made only for those of which the differences might at first glance seem interesting, in order to avoid useless calculations".

We consider that one cannot assign significant value to too low differences in yield: *below 1 or even 2 quintals of paddy per hectare* in the example considered; the averages of two series of 5 controls scattered in the experimental field may present a similar difference and yet who would say that these differences had significance? Even supposing the field absolutely homogeneous, the series of inevitable experimental errors (irregular tillage, hereditary qualities of the plants used (these are not pure lines), the water system of the rice field, differences of drying of the crop, errors in weighing) is of the same order of size, even when applied to an average of 5 results.

We consider that *in the interior of a given experimental field a difference in yield has more chances of being reliable the higher is the absolute and relative value, and the greater the number of repetitions, of the experiments*, except in the case of plots which have shown an abnormal growth from a cause which is known (drought, inundation, animal damage, etc.) or unknown (variation of fertility, etc.). The results of these plots will be regarded as nil, and it is part of the experimenter's work to follow his experimental field step by step during the course of growth in order to note anything abnormal. No mathematical artifice can replace this.

As regards the technique of experimentation many disputable points are capable of having a considerable influence on the final result. Thus the Annam grower plants his stools of rice closer in poor soils, further apart in fertile soils in which tillering will be better; it is probable that the optimum spacing varies with the fertility of the soil. In an experimental field in which we have control plots and others receiving large quantities of nitrogenous fertilisers must we, in order to "place all the plots in the same conditions", adopt for each field a uniform spacing? And what distance should be adopted? A wide spacing will favour the manured plots, close planting will favour the controls, and if we adopt an intermediate spacing what is there to prove that we benefit one more than the other? If in order to place "each fertiliser formula in conditions such that it may take its maximum effect" (this is the opinion of certain agronomists, among others of the German professor, Dix), we propose to adopt different spacings for each treat-

ment, how are they to be chosen? It would be necessary for this to know the degree of efficacy of the fertilisers, that is to say to have finished the experiment before having started it!

In the varietal trial fields one is obliged, in order not to multiply the trials indefinitely, to adopt a total of the average conditions, which favours certain varieties to the detriment of others.

The rices cultivated in the rainy season in Tonkin include a whole series of varieties and the Annam grower places each in different conditions as regards the time of culture (there are at least 6 distinct sowing seasons), soil fertility and water system. An experimental field intended for the comparison of these varieties cannot produce this variety of conditions: what would signify the comparison of the yield of a variety adapted to a rich soil cultivated in a fertile rice field with that of a poor variety in a poor soil? And if one places them in the same conditions these varieties are not grown in their normal conditions of culture and their aptitudes are not scientifically utilised.

From all this one might conclude that experimentation is impossible. We desire to say merely that there are not perfect experiments, all contain an arbitrary part: there are those which are passable, and others which are not. Also the results should not be regarded as certain facts but should be interpreted widely and considered rather as indicating the order of size. In the present state of our knowledge it is often a mistake to wish to translate the phenomena of life by mathematical formulae.

We have said above that the results of an experiment are of greater value the greater the number of repetitions: 5 replications constitute a minimum which should not be passed. The double replications adopted at Vercelli for the fertiliser trials seem to us quite inadequate. In experimental fields which are not homogeneous (in Tonkin there are no others) it would be better to raise these figures even to 10. The intercalation of numerous control plots (one control for 2 or 3 manured plots) is also necessary, in order to record the irregularities in fertility of the soil. On a large experimental field, containing 50 or more controls, one could construct the curve of the variations in yield of the controls; if it gives the form of a narrow bell (curve of QUETELET) the experimental field might be regarded as satisfactory.

If these two conditions are realised (and we consider them much more important than the use of the statistical method) the reliable result of each fertiliser formula will be the average yield of the series of plots which has received this fertiliser; this average will have more value if the elements of which it is composed do not differ too much or, if it is preferred, if the absolute probable error is not too high (in order to record these differences it may be calculated, although it is not indispensable), and if the controls of the experimental field have shown a greater regularity in yield.

If the statistical method is held to be essential for calculating the figure above which a difference in yield is more probably due to the factor under test (fertiliser variety) than to experimental errors, we propose the following method:

One calculates the absolute probable error of each mean of results, according to the method of PETERS (which is simpler than that of BESSEL for it does not

include raising to the square or extraction of the square roots and is sufficient as an approximation). Then one takes the mean of all the probable errors of the experimental field and decides that each result is affected by this «mean probable error». The probable error of a difference in yield between two results of the experimental field being:—

$$Ed = \sqrt{E_1^2 + E_2^2}$$

where  $E_1$  and  $E_2$  are the probable errors of each of the results, in our convention  $E_1 = E_2 = E_m$ , which is the mean probable error. The probable error of the difference will be:—

$$Ed = \sqrt{2 E_m^2} = E_m \sqrt{2}.$$

And if we calculate that a difference of yield is significant when it is more than 3 times the probable error of the difference, that is to say:—

$$D > 3 Ed = 3 E_m \sqrt{2}$$

or  $D > 4.2 E_m$

to simplify one could regard the difference as significant when it is more than 4 times “the mean probable error” of the experimental field.

When a single fertiliser is used in different amounts, alone and in a series of mixtures, one can control the results obtained by comparing one with the other instead of considering each separately. Thus, studying the effect of phosphoric acid one regards the total of the results obtained, first by applying this fertiliser alone, then by adding it to a nitrogenous, potassic, or nitrogenous and potassic, formula. Let us take again the previous example of fertiliser trials in Cochinchina, pages 89 and 90 (variable phosphoric acid). At first glance it appears that the application of phosphoric acid alone or added to another fertiliser formula has sometimes increased and sometimes reduced the yields. A count shows that the phosphoric acid has increased the yield 25 times and reduced them 23. This allows of a doubt, in the interpretation of the results, of the value of the three gains due to the supply of the fertiliser that the calculation of the probabilities gives as significant.

This control of the results one against the other must be made with discrimination: it is not impossible that one fertiliser, ineffective alone, may have a useful action if added to another fertiliser (one can by interpreting it more widely still make use of the “law of the minimum”).

Research in the rice field presents, in addition to the difficulties inherent in all field experimentation, special difficulties due to the presence of water. If in comparative varietal trials one can without inconvenience plant the varieties side by side in a large plot, in trials of mineral fertilisers, which are generally soluble, it is necessary to isolate each experimental unit by a bank of soil (1) as water-

(1) Taken from outside the experimental field, because fertility is greatly reduced where one removes the surface soil, particularly if it has not been deeply ploughed.

tight as possible and to establish a system of irrigation and drainage making it possible to supply with water or to drain each plot separately.

The causes of experimental difficulties in this case are numerous, such as inundation, drought, rupture of a bank by rats, crabs, snakes, or even by neighbouring peasants who may derive profit from the water. Also damage to the plants by rats, crabs, insects or diseases is sometimes so serious that it takes all value from the results obtained.

It is known that in dry cultivation fertilisers are liable to penetrate a little beyond the place where they are spread : this penetration must go further in the rice field. The soil however must retain somewhat strongly the greater part of certain fertilisers even when they are spread under water, since one clearly sees the effects during growth of irregularities in the distribution of nitrogenous fertilisers.

The plants close to the bank which bound each plot may send their roots into them and thus find an environment which is not submerged and is quite different in the concentration of the nutritive solutions, aeration of the soil, etc. By observing a rice field at the time of tillering one notices that the plants situated at the edge, over a width of 0.5 to 1 metre, have a different colour from rest of the plot, generally a deeper green. At the approach of harvest one may see a whole field except the edge lodged, and sometimes the reverse.

The possibility of penetration of fertilisers from one plot to another and the influence of the bank make it necessary for the accuracy of the results to eliminate the edge of each plot before harvesting. It is not accurate to say that one can harvest the plots with the edge under the pretext that one requires only a relative result : its influence is not the same in a control as in a plot heavily fertilised with nitrogen ; one sees by following the growth a different reaction. Similarly the edge of a strongly tillering variety is more favoured than that of a variety which tillers little.

In Ceylon a width of at least one foot is eliminated, but the banks are very narrow. In Indochina where they are wider it is necessary to reject at least one metre. At Tonkin we have carried this still further as only one are is harvested from the middle of the trial plots, the area of which varies between 2 and 3 ares.

Improvement studies must be carried out in close collaboration with the growers and this has been thoroughly realised by the ' Office Indochinois du Riz '. It is this permanent contact which makes it possible to note easily the economic possibilities — which are so important a part — of an improvement. If fertilisation is the most rapid method of increasing yields it is economically possible only with local resources of manure, which are often too limited. Genetics is always a practicable method of improvement (the costs of changing the seed being insignificant), but slow : only the ignorant demand a rapid result.

It is probable that important progress will be realised only by the parallel improvement of the plant cultivated and the conditions of culture, such as the management of the water system and fertilisers ; but research on the water system,



the preparation of the soil, the management of the nursery, control of diseases and pests should not be neglected. On the other hand it must not be forgotten that improvements in technique are dependent on economic conditions, such as problems of cheap credit and the marketing of the crop.

We shall develop these considerations at greater length in a book on "La riziculture dans le delta du Tonkin et son amélioration" which we are now preparing in collaboration with M. R. JEANNIN.

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## MISCELLANEOUS INFORMATION

### General Agronomy.

#### Meteorology.

THE MALAYAN METEOROLOGICAL SERVICE. — In 1928 the Malayan Meteorological Service, which is a branch of the Survey Department of the Federated Malay States and Straits Settlements, was greatly expanded. In the following years a number of new stations were established, completely equipped with autographic instruments and staffed by full-time observers, while the previously existing stations were inspected and their observations placed on a uniform basis.

The results of these activities appear in the «*Summary of Observations, 1931*», recently published as a volume of 195 pages, mainly tables.

A descriptive introduction gives a good general account of the normal climate of Malaya and the departures from normal during 1931, then follow tables for 18 meteorological branch stations, including three at levels above 4,000 feet. These summaries are remarkably complete, each station occupying eight pages. Finally there are shorter summaries of temperature, humidity and rainfall for 49 auxiliary stations.

(*The Meteorological Magazine*, London 1932, Vol. 67, No. 799, p. 166).

THE CLIMATE OF FRANCE FROM 1929 TO 1932. — The rainy period began in October 1929 in the north of France then came suddenly to an end about 10 September 1931, after a duration of about two years, in the course of which the rainfall remained nearly constantly above the average. In Paris there fell 1700 mm. of rain between 1 October 1929 and 31 August 1931, whereas in a normal period the rainfall of these 23 months would not even have reached 1100 mm.

Since September 1931 the conditions have completely changed. In the northern half of France the rainfall was constantly deficient. In the centre and south there was also a period of drought, interrupted however by a very rainy November and in the south east by a very wet January.

Such conditions are extremely favourable to wheat growing. In the region of Paris, for example, the wheat yields have always been above the average when the quantity of rain between 1 December and 1 May was below 100 mm.

In an article on this subject (*Journal d'Agriculture Pratique*, February 1932, No. 8) M. Joseph SANSON forecasts that 1932 would be favourable to wheat, for since 1 December 1931 only 65 mm. of rain had been recorded in Paris.

The yield of 1932 have shown him completely right for in the northern part of France the wheat crop this year exceeded that of 1931 (a wet year) by as much as 52 %.

T. B.

#### Soil Science.

DETERMINATION OF THE READILY AVAILABLE PLANT FOODS: COMPARISON OF THE METHODS OF DIRKS AND NEUBAUER. — A comparison of these methods has been carried out at the Agricultural Experiment Station of Cassel, Germany, by WIESSMANN, BOILMANN and MÜLLER, who have obtained the following results:—

*Potash.* — (1) The results by the two methods agree well only for soils rich in potash (over 40 mg. of  $K_2O$  according to NEUBAUER, over 2 mg. according to DIRKS). For the other soils there is no agreement.

(2) With the NEUBAUER method and using the fertiliser table of ROEMER, the soils are generally considered as requiring more potash than if the estimation was made by the method of DIRKS with his fertiliser table.

(3) When the method of DIRKS is used, agitation of the soils with a solution of calcium bicarbonate gives quantities of potash about four times greater than agitation with distilled water. The choice of the solvent to use depending on the pH of the soil there are still divergencies between the various writers as to the estimation of the potash requirement of soils.

*Phosphoric acid.* — (4) The values indicated by NEUBAUER and by DIRKS for a content in  $P_2O_5$  sufficient for all cultivated plants should theoretically be equal; but the experiments of the writers have shown on the contrary that the great majority of the values of DIRKS are below those of NEUBAUER.

(5) The result is that by using the method of DIRKS and his fertiliser table the soils are generally considered as requiring more  $P_2O_5$  than is the case with the NEUBAUER method and the fertiliser table of ROEMER.

(6) These two methods give results in agreement only if soils rich in phosphoric acid are being distinguished from soils not rich. On the contrary as soon as one desires to subdivide the soils further into groups the agreement of the two methods leaves much to be desired.

(*Zeitschrift für Pflanzenernährung, Düngung und Bodenkunde*, B, II. Jahrgang, Heft 10, p. 441-454).

**MULTIPLICATION AND RESPIRATION OF SOIL BACTERIA IN THE PRESENCE OF PROTOZOA** — Important researches on this subject have been carried out at the Rothamsted Experimental Station (England) by Dr. TELEGDY KOVÁCS of the Soil Science Section of the Hungarian National Institute of Chemistry, who received a grant for the purpose from the Hungarian Government.

Bacteria alone or mixed with protozoa were grown in sand with two distinct nutritive solutions with an equal content of nitrogen, containing respectively (1) peptone, (2) glucose and ammonium sulphate. The writer aimed at determining to what point the liberation of  $CO_2$  by the bacteria was influenced by the presence of protozoa. He obtained the following important results:—

(1) The presence of protozoa increased the liberation of  $CO_2$ .

(2) This increase of  $CO_2$  was greater in the culture with the solution of glucose + ammonium sulphate than in that with the solution of peptone.

(3) The increase in the number of protozoa beyond a certain limit is unfavourable to the liberation of  $CO_2$ , especially in cultures inoculated several consecutive times with protozoa.

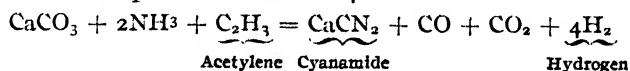
(4) In the presence of protozoa the number of bacteria diminishes, but their activity is greater and more regular.

(5) There is a definite correlation between the number of bacteria and the quantities of  $CO_2$  liberated in the culture with a solution of peptone, but less definite in that with a solution of glucose + ammonium sulphate, especially in the presence of protozoa.

(*Mezőgazdasági Kutatások* (Agricultural research) Budapest 1932, Vol. V, N. 6, p. 203-214).

### Fertilisers and Fertilising.

**NEW PROCESS OF MANUFACTURING CALCIUM CYANAMIDE, PRODUCING PURE HYDROGEN AS A BY-PRODUCT.** — This process (English Patent No. 368424) utilises the reaction produced between ammonia, a non-saturated aliphatic hydrocarbon and a carbonate of an alkaline earth at temperatures between 400 and 1000° C:



Besides acetylene other hydrocarbons may be used, such as ethylene, propylene and butylene.

The reaction is unfavourably influenced however by phosphates of copper, iron and molybdenum.

(*Chemical Age*, London 1932, Vol. XXVII, No. 687, p. 192).

**WORLD PRODUCTION OF POTASH IN 1931.** — This production is estimated at 1,478,800 tons as compared with 2,236,300 tons in 1930 and 2,183,600 tons in 1929, that is to say that it has been reduced by about 34 % as compared with that of 1930.

The following table gives a comparison of the production of pure potash (expressed in tons of  $K_2O$ ) of the principal producing countries in 1929, 1930 and 1931 :

	1929	1930	1931
Germany . . . . .	1 580 000	1 620 000	964 000
France . . . . .	492 400	505 500	366 800
Poland . . . . .	38 000	37 000	40 000
Spain . . . . .	24 800	24 200	30 000
Russia . . . . .	—	—	18 000
United States . . . . .	48 400	49 600	60 000
Total . . . . .	<u>2 183 600</u>	<u>2 236 300</u>	<u>1 478 800</u>

It is clear that the reduction in production which occurred in 1931 affected only 2 European countries: Germany and France, while in all the other countries the production in relation to that of 1930 increased, particularly in the United States where the increase exceeded 10,000 tons.

The United States, which began to produce potash only in 1916, has made rapid progress but does not yet supply more than about a tenth of its requirements in potash salts. A considerable increase in this production may however be foreseen as a result of the efforts of a new Company which has been formed.

The Russian deposits are considered rich, but their exploitation is hampered by great difficulties of transport.

The Spanish deposits are not extensive and their exploitation is costly.

France is now the second potash producing country in the world, but as regards the consumption of  $K_2O$  per hectare it comes only in the fourth rank, with 9 kg, after the Netherlands (44 kg.), Germany (38 kg.) and Belgium (24 kg.).

(*Bulletin des Engrais*, Paris 1932, No. 91, p. 338. — *The American Fertiliser*, Philadelphia 1932, Vol. 77, No. 3, p. 26).

T. B.

## Crops of Temperate Countries.

**RESEARCH ON THE OCCURRENCE OF SEEDS IN THE SOIL.** (*The Journal of Agricultural Science* ; H. G. CHIPPINDALE and W. F. J. MILTON ; July 1932, p. 30). — In 1931 the writers carried out research on this subject at the Aberystwyth Experimental Station (Wales) with special attention to certain grassland soils. In the case of certain heavy clay soils they obtained germination in samples taken at 25 to 35 centimetres in depth. In the samples taken from peat soils covered with natural associations of *Molinia*, *Nardus*, *Agrostis*, and *Calluna*, however, and at depths of over 7 cm., few germinations were obtained ; these soils having the characteristic of containing only very few earthworms, it has been suggested that worms play a considerable part in the burying of seeds.

In order to verify this point the writers collected worm excreta on a field in which worms were abundant and in which seeds were found to a depth of 35 cm. These excreta were placed in conditions favourable to the germination of any seeds that they might contain and it was found that they contained a certain number of viable seeds. Worm excreta appear on the surface of the soil in considerable number in autumn and in smaller quantities in spring; at other seasons of the year worms deposit their excreta below the surface of the soil. It is thus easy to realise how the seeds become buried.

In 1881 DARWIN had already shown that seeds and small stones are carried by earthworms to the bottom of their holes; the collapse of the holes, also the covering of the soil by an accumulation of excreta may also bury certain seeds.

In consideration of these facts it seems probable that the greater part of the seeds buried at a considerable depth are carried there by the intermediary of worms and it would be rash to draw conclusions concerning these seeds from merely determining their position in the soil.

D. K.

THE GERMINATING CAPACITY OF SEEDS OF CULTIVATED PLANTS. — Very exhaustive experiments have recently been made by a new method of experimentation which has led to the establishment of the minimum and average time necessary for the germination of the seeds of the principal crop plants. It has been found that the minimum temperatures necessary for germination for a certain number of plants are considerably below those established in 1879 by HAARBERLANDT and hitherto regarded as accurate. Thus, for example, the four principal cereals begin to germinate at a temperature of 1° C. The minimum temperature necessary for germination on the other hand exceeds 1° C. for the following plants: —

	Minimum temperature necessary for germination
Flax . . . . .	2-3° C
Rape, white clover, melilot . . . . .	3°
Blue and yellow lupin . . . . .	3-5°
Hybrid clover, serratella . . . . .	5°
Maize, buckwheat . . . . .	9°

Accurate observation of the time necessary for germination at temperatures between 2° C and 16° C has led to the establishment of the following principles: for a given plant the product of the average germination time by the temperature is constant. This product (number of days per temperature) is for example 95 for oats, 79 for spring barley and about 48 for wheat and rye. The said products may be expressed graphically by a hyperbola, which makes it possible to deduce the average germination time for a given temperature.

(TAMM E., Untersuchungen über Keimungsminimum, Keimfähigkeit und durchschnittliche Keimdauer landwirtschaftlicher Kulturpflanzen. — *Archiv für Pflanzenbau*, Berlin 1932, Bd. 8, Heft 3, p. 527-557).

N. G.

INFLUENCE OF THE LENGTH OF DAYLIGHT ON FLOWERING BEHAVIOUR. — An interesting contribution to the studies on photoperiodism recently carried out by GARNER and ALLARD (U. S. A.) and SCHICK (Germany) and especially in Russia (LUBIMENKO, MAIMOV, DOROSHENKO) is contained in the observations concerning the flowering behaviour of the hog peanut [*Amphicarpaea (Falcata) comosa*]. This plant develops flowers of different kinds. Aerial perfect flowers can develop only when the days are

not less than  $13\frac{1}{2}$  hours long. The greenish aerial cleistogamic flowers can develop under all day lengths ranging from 5 to  $13\frac{1}{2}$  hours. Also the extremely rudimentary cleistogamic type of flower giving rise to hypogean pods develops under all lengths of day from 5 hours up to  $13\frac{1}{2}$  hours, the form of the hypogean bean being determined entirely by specific conditions associated with a soil environment.

The use of weak electric light to supplement the short days of winter inhibited both the development of the winter form of aerial cleistogamic flowers and the formation of hypogean beans.

In the field length of day seems to operate in fixing the more or less regular seasonal incidence of the several forms, which appear to be derived from the normal blue flowers of the species by gradations of reduction of the floral structures until the extreme hypogean type is attained.

(*Journal of Agricultural Research*, Washington, 1932, No. 2).

N. G.

FORMATION OF A STATION FOR THE IMPROVEMENT OF POTATO GROWING IN SPAIN. — By Decree of the Ministry of Agriculture of 21 March 1933 a Station for the Improvement of Potato Growing has been formed at AYAYA which will form a section of the Institute of Agronomic Research. The determination to create this Station is a result of the importance of potato production, which occupies the second place in Spanish agricultural production. The area occupied by potato growing has developed from 30,000 hectares ten years ago to over 40,000 hectares at the present time. The average potato production in Spain reaches 45 million quintals with an approximate average of 112 quintals per hectare, or a value of over 900 million *pesetas*. The wheat production alone exceeds that of potatoes, its average annual value being 1800 million *pesetas*.

The activity of the Station will gradually extend over the whole territory of the country and its plan of work will be as follows:— (1) to select the varieties existing in Spain, especially those most valued on the market and by the growers; (2) to study the adaptation of varieties for improving the condition of the present varieties as regards the different uses and resistance to diseases; (3) genetical studies on the improvement of the potato; (4) study of the growth and calculation of the potato in relation to environment and especially to particular soils; (5) the most suitable fertilisers; (6) study of altitude cures to produce selected strains resistant to various diseases; (7) determination of the Stations to carry out this work and of establishments for selection and for production of selected potatoes; (8) determination of the zones for cultivation of the seed potatoes for supplying seed to the regions of culture; (9) organisation of the zones and centres of production of seed potatoes; (10) direction and orientation of the commercial organisation of this production, thus establishing bases of immediate improvement of the culture and production of potatoes.

Dr. José Maria DIAZ DE MENDIVIL, Chief Engineer of the Agronomic Section of the Province of Alaba (Victoria) has been nominated as Director of the Station

(*Gazeta de Madrid*, Madrid 1933, año CCLXXII, tomo I, num. 80, pag. 2120).

A. P.

## Tropical and Sub-Tropical Crops.

COTTON IN TOGOLAND. — Cotton is cultivated mainly in the circles of Sokadé, Lomé, Klouto, Anécho, Atakamé, Nuatja and in the northern part of the territory.

Since 1923, selected seeds have been distributed of varieties suited to the country.

The following kinds are grown: *Gossypium barbadense*. *G. brasiliense* and the *Allen*. The object of the Administration in promoting the cultivation of these varieties

has been to eliminate the growing of the poorer indigenous cottons as practised by the native cultivators. With a view to instructing the African grower in improved methods of cultivation, the Administration has also established six trial fields of *Allen* cotton in the agricultural sector of Sokodé and five in the Mango circle. Selection work is at present carried out at the Nuatja Experiment Station.

In order to facilitate export, all exporters are required, in addition to the usual indication of quality, to indicate the place of origin in Togoland of the ginned cotton. The bales accordingly bear the following marks respectively :

*Togo-Palime* for cotton picked in the Klouto circle.

*Togo-Tsevie* for cotton picked in the Lomé circle, apart from the region of Agbelove.

*Togo-Agbelove* for cotton picked in the region of Agbelove.

*Togo-Anecho* for cotton picked in the Anecho circle, apart from the Tabligbo subdivision.

*Togo-Tabligbo* for cotton picked in the Tabligbo subdivision.

*Togo-Nuatja* for cotton picked in the Nuatja subdivision.

*Togo-Atakpame* for cotton picked in the Atakpame circle, apart from the Nuatja subdivision.

*Togo-Sokode* for cotton picked in the Sokode circle.

*Togo-Mango* for cotton picked in the Mango circle.

(*Association cotonnière coloniale*, January 1932).

J. L.

**CULTIVATION OF THE COCONUT IN THE COLONY OF MOZAMBIQUE.** — Coconut growing holds indisputably the first place among the permanent crops of Mozambique. The plantations extend over an area of more than 83,000 hectares and their annual production will before long be as much as 45,000 to 50,000 tons. It is estimated that the number of coconut palms in the province at the present time, including the territories of Manica and Sofala, is about 10 millions, seven million of which are grown by Europeans in regular plantations the remainder belonging to native growers. Only half the number of these trees are at present bearing or beginning to bear ; the remainder, consisting of young plantations, will begin to bear about 1937 or 1938.

The coconut is to be found throughout the province, but more especially in the district of Quelimane, along the delta of the Zambesi, on a strip from 15 to 20 kilometres long as far as the Rio Raraga and even to the mouth of the Tejungo. The accompanying table shows the distribution of the coconut in the principal districts and territories.

*Distribution of the Coconut Palm in the different districts  
of the Province of Mozambique (P. E. A.)*

Districts	Trees grown by Natives	Trees grown by Europeans	Total
Lourenco Marques . . . . .	...	3,000	3,000
Inhambane . . . . .	...	850,000	850,000
Quelimane . . . . .	2,500,000	4,500,000	7,000,000
Mozambique . . . . .	250,000	1,500,000	1,750,000
Cape Delgado . . . . .	...	300,000	300,000
Manica and Sofala . . . . .	...	...	...
	<hr/> 2,750,000 <hr/>	<hr/> 7,153,000 <hr/>	<hr/> 9,903,000 <hr/>

Coconut growing has been practised for a very long time in the Colony of Mozambique. As early as 1880-85, the Correa and Carvalho Company owned a plantation of 30,000 palms which for that period represented a very large undertaking. Nearly all the large Zambesi plantations, in fact, were established in 1898-1900. From thence the cultivation spread till it reached Quelimane and northwards up to the limit of the Mozambique district, in 1918. During the following ten years intensive work was carried on, ending in the present position of the plantations.

In Mozambique coconut trees begin to bear after 8 years, and the period of full production begins from the 12th year. The average yield per tree is somewhat variable and may be from 30 to 50 nuts. An annual yield of 40 nuts per tree is looked upon, for a regular plantation of the Quelimane district, as a satisfactory yield. It is reckoned that from 5.5 to 6.5 nuts are required to secure one kilogramme of copra.

In the Quelimand and Mozambique districts the distance maintained between the trees varies from 8 to 10 metres. Propagation is effected by seeds. For this purpose the nuts are selected from trees of about 15 years showing all the desired characteristics. The nuts are sown in nurseries and the young plants remain there for about a year until they have grown to a height of from 0.50 to 0.80 m.

The copra produced in the province is nearly all sent to the European markets : Marseilles, Hamburg, Antwerp, London, Lisbon. A small quantity, from 2,000 to 5,000 tons, is utilised on the spot by the oil and soap factories of Lourenço Marques.

(RIBEIRO Caldeira, in the *Boletim da Sociedade de Estudos da Colonia de Moçambique*, Lourenço Marques 1932, año 1, No. 5).

J. L.

**NAGPUR ORANGES** — Nagpur oranges, known as «southra», have a great reputation and are the best variety of orange grown in India. At present there has been little attempt made to develop export, and the oranges are supplied instead to the large Indian cities, from Peshawar to Tuticorin and from Karachi to Calcutta.

The production is concentrated in villages situated on a radius of 50 miles round Nagpur. The first impulse was given to the cultivation and the trade about the beginning of the century, in 1906 the area cultivated in oranges was only a thousand acres, in 1931, it has increased to more than 55 thousand acres.

There are two crops per year, known as «ambiabar» and «mrigar». The first is so named because the flowering corresponds to that of the mangoes, in February-March.

The fruit comes on to the market from the middle of September till the end of December. The second crop follows on a flowering in June-July; and the fruit comes on the market from February to the middle of May. If there is enough water in the wells, the second crop may last till the beginning of June. Taken together the two crops supply the market for nine months in the year. The second crop is the more important; the fruit is sweeter than that of the first crop and also more appreciated as coming on the market at the time of the hot weather.

(NAIR P. D. *Agriculture and Livestock in India*, Vol. II, Part 6, Calcutta 1932).

J. L.

### **Agricultural Engineering.**

**FOUNDATION OF THE MAX-EYTH SOCIETY FOR THE PROMOTION OF AGRICULTURAL ENGINEERING ON THE OCCASION OF THE "GREEN WEEK" OF BERLIN, 1933.** — One of the characteristic features of the Berlin Agricultural Week of 1933 was the general interest shown by the farmers in everything concerning agricultural engineering. Rarely



in fact has this branch of agricultural science been so well represented, in spite of the suppression during the Week of the usual exhibition of agricultural machinery. The violent attacks directed in 1932 against machinery have given way in front of a more reasoned knowledge of the latter and the opportunity for its use. Baron VON WILMOWSKY, President of the "Reichskuratorium für Technik in der Landwirtschaft" (R. K. T. L.) explained on this occasion that it was not a matter of replacing human labour by the machine but rather of using the machine to reduce the costs of production of each farmer. The tendency of the R. K. T. L. is towards the formation of model farms which shall give the best possible technical and economic output without being subsidised by the Governments but being supported entirely by their own resources and capable of showing the small and medium sized farms how production costs may be reduced.

One of the most important works of the R. K. T. L. will therefore be the reform and extension of the Offices of Agricultural Consultation as well as the promotion of practical training of the rural population in agricultural engineering.

In order to produce a better concentration of its efforts the Berlin Agricultural Week provided for the foundation of the "Max-Eyth-Gesellschaft zur Förderung der Landtechnik" (Max-Eyth Society for the Promotion of Agricultural Engineering) which will act as a directing organisation embracing all the interests concerned in the promotion of agricultural engineering particularly as regards scientific technique. The Society proposes to combine all the bodies working for agricultural engineering to obtain an exchange of opinion and to represent their common interests to the world.

The activities of the new Society consist mainly of meetings and the publication of the scientific work of the Members. The Society is divided into several technical sections. The results are published in the *Mitteilungen der Max-Eyth-Gesellschaft* as supplements to the review, *Die Technik in der Landwirtschaft*.

POSSIBILITIES OF THE USE OF COAL GAS FOR FARM ENGINES. — Under the direction of Prof. KÜHNE and with a grant from the R. K. T. L. very thorough experiments with different types of gas generators applied to the engines of tractors and of light camions (of a total weight of 8.2 tons including 3 tons of load) have been carried out at the Polytechnical School of Munich. The results of these experiments may be summarised as follows.

The ordinary internal combustion engine constructed to work with spirit gives a relatively lower output when it is fuelled by coal gas. One obtains therefore with the same compression (about 5:1) in the engine an output reduced by 35 to 40 % on an average. By increasing the compression to 7:1 the loss in efficiency may be reduced to 30 % and by increasing it to 9:1 the loss may be reduced to 20 % of the normal output.

To obtain complete efficiency it would be necessary to use a compressor.

By using air-dried wood, in blocks about 8 cm. long and 30 sq. cm. in cross section, from 0.8 to 1.3 kg. per HP/h is consumed.

The tests were carried out on specially chosen roads and it was found that by increasing the compression of the engine to 9:1 the fully loaded camion consumed about 87 kg. of wood per 100 km. as compared with 36 litres of petrol in the same conditions. The reduction of running costs, after having calculated the wear and tear of the gas generator, is from 32 to 63 % according to the price of the wood. The experience acquired during running was generally satisfactory. The loss in output of the engine, of about 20 %, exerted only a very small influence in practice on the efficiency of the light trial camion.

The question is different for farm tractors. In the case of these gas generators could acquire a certain importance only if they succeeded in completely eliminating the loss in efficiency. It would be possible also to replace spirit by coal gas in several other cases as, for example, to work fodder cutters and crushing mills, thrashers and machines for agricultural industries (mills, graders, etc.).

(*Technik in der Landwirtschaft*, Vols. 1932-1933).

**AMERICAN DIESEL TRACTORS.** — The United States have up till now showed themselves opposed to the recent development of the use of the Diesel engine applied to tractors which has taken place in Germany and England. Now in consequence of the very considerable increase in the duties on petrol the makers of engines are beginning in this country also to take an interest in the Diesel engine, which by its consumption of cheap heavy oil has become in practice more economical than the internal combustion engine.

The first two Diesel tractors, one of 50 HP and the other of 60 HP, have just been built in the United States by the "Caterpillar" firm.

(*Farm Implement News*, Chicago 1933, No. 3.)

**A NEW POTATO LIFTER.** — After numerous years of research M. BONGARTZ, a German farmer, has invented a new potato lifter which works without drawbacks on soils of medium consistency and on fields in which the tops are not too close.

The machine is of simple construction and requires only a low traction force. A roller fitted with knives cuts the tops which are then lightly buried by a small knife. The furrow is then raised by a share with a concave posterior prolongation from which the potatoes are carried by forks on to a grid, while the soil falls back on the ground. Practical trials with this machine have given good results.

(*Deutsche Landwirtschaftliche Presse*, Berlin 1933, Nr. 4).

H. J. H.

## Animal Husbandry.

### Feedstuffs and Feeding.

**THE FEEDING OF MINERAL SUPPLEMENTS TO ANIMALS IN SOUTH AFRICA.** — In certain grassland in the Union of South Africa grazing stock are unable to find sufficient phosphorus for growth or milk production. This lack of phosphorus leads the animals to consume the bones of carcasses that they find and thus to contract the disease called "lamsiekte" if the carcasses are infected. The animals are therefore fed a phosphatic supplement. To determine what quantities of a phosphatic product should be given it is necessary to know the content in  $P_2O_5$  of the product and its availability. The availability of the  $P_2O_5$  of bone meal varies slightly but is generally about 70 %, that of the  $P_2O_5$  of soluble phosphates (di-sodium, mono-ammonium) is higher, about 100 %.

It is considered in general that when the phosphorus contained in the fodder is sufficient for the maintenance of the animal it is necessary to add a daily supplement of 12 gms of available  $P_2O_5$  in order to obtain the maximum growth in young stock and 21 gms for a daily production of about 2 gallons of milk. For sheep the supplement is about 1 gm of available  $P_2O_5$  per head per day.

The availability of the phosphorus may be determined by feeding experiments and farmers should require to know from the seller the content in  $P_2O_5$  of the product bought.

The phosphatic supplement may be fed to the animals in three different forms :

(1) dosing in powder form; (2) in troughs *ad lib.*; in this case control of the quantity of phosphate consumed can be exercised to a certain extent by adding salt to the phosphate; (3) in the drinking water. This last method is the best. The choice of the phosphates

to use in this method will be limited by their solubility in water and their price. Good results have been obtained with the use of di-sodium phosphate, then with mono-calcium phosphate and more recently with mono-ammonium phosphate, which is now cheaper than the other water-soluble phosphates because it is manufactured on a large scale as a fertiliser. If the fertiliser is to be used for stock feeding it should be guaranteed that it does not contain more than 0.1 % arsenic and is free from fluorine.

It does not appear that the animals lack other mineral substances in the pasture. Iron is often incorporated in the form of ferrous phosphate on account of its tonic effect, especially when animals suffer from anaemia after worm infestation. Sulphur is not deficient in the pasture; it is however incorporated in licks mainly as an antitoxin in cases of cyanide poisoning ("geilsiekte"). Of the minerals required in small quantities iodine may be mentioned chiefly, then manganese, which apparently also plays an important role in nutrition.

(Dr. P. J. DU TOIT e Dr. A. I. MALAN, *Farming in South Africa*, Pretoria 1932, Vol. VII; No. 81, p. 387-392, 5 fig.).

I. I.

ADVANTAGES OF SPROUTED GRAIN FOR THE FEEDING OF FARM ANIMALS AND PARTICULARLY THE HORSE. — (*Comptes Rendus Hebdomadaires des séances de l'Académie des sciences*, Paris, M. Laurent RAYBAUD, 13 February 1933). The influence of sprouted grain in the feeding of farm stock and particularly of horses is highly beneficial. This may be explained by three main causes: the grain is completely softened and thus more digestible; the starch is partially transformed into sugar and thus more available; the vitamins and diastases are very active. Horses may be fed sprouted oats either as a complete ration or as a partial ration; for a normal horse the ration may be considerably reduced. After six months' experiments on four horses doing continuous and strenuous work the economy effected by replacing ordinary oats by the same volume of sprouted oats was as much as 38 % and the horses had increased in weight by 3 to 6 %. With cows the writer found an increased milk yield of half a litre per day per head.

Moreover the increased vitamin content of the milk increased the growth of the calves. Similar facts were found with colts and pigs which when fed sprouted grain continued to develop very satisfactorily. The gain in egg production obtained with this system was remarkable.

D. K.

CASSAVA AS A FATTENING FEED FOR POULTRY. (*La Vie à la Campagne* P. ANDOUARD, 1 March 1933) — Cassava meal contains:— available protein, 1.45 % — available fat, 0.3 % — available starch, 75.5 %. This food is thus very deficient in proteins and does not supply to laying animals the nutrition necessary for the elaboration of egg albumen and of vitellin of the yolk. On the other hand its great richness in starch, which is rapidly transformed during digestion into glucose, makes of this meal an energy producing food of the first order or, according to the requirements of the organism, a powerful fat generator by the transformation of the glucose into fat under the influence of an internal diastase. If the ration contains insufficient of these carbohydrates laying is reduced and when the hen has exhausted her own reserves of glycogen and fats she stops laying. When hens in this condition are fed cassava meal they recommence laying.

D. K.

AMYLACEOUS SUBSTANCES, PURIFIED OR MODIFIED, AS SUPPLEMENTS TO SKIMMED MILK. — Mine RANDOIN and MM. L. & R. LECOQ, having previously proved that artificial foods based on lactose and of similar composition to that of milk represent a ration

with a very narrow balance of food value, have studied the food value of cows' milk modified in constitution by elimination of the lipides and by addition of various glucides, particularly saccharose, maltose and glucose, using in the experiments amylaceous substances (maize starch, potato flour), purified or modified by various processes such as malting, boiling or roasting. These experiments are based on the frequently recommended practice of adding various amylaceous substances to skimmed milk in the raising of young farm stock. Two series of feeding experiments were carried out, adding to dry skimmed milk 40 % of purified maize starch or potato starch, and adding to the skimmed milk amylaceous substances modified by malting, boiling or roasting.

The following conclusions are drawn from these experiments :—

(1) It is possible in a certain measure to replace the lipides of cows' milk by natural or transformed amylaceous substances (maize starch, potato starch), without upsetting the nutritional balance. The superiority of this sort of glucides over pure sugar seems to be due to their physico-chemical state.

(2) Maize starch is superior to potato flour as a supplement to skimmed milk. The lesser digestibility of potato flour (the starch grains of which are large and highly mineralised) must be the cause of the differences observed.

(3) Boiling and malting, carried out so as to render the starch soluble rather than to saccharify it, increase the digestibility of starches by increasing also their value as a supplement to skimmed milk (in agreement with the observations of TERROINE on calves). Treatment with dry heat (200°C), dextrinisation and roasting are much more favourable than boiling and malting to the utilisation by the organism of the starch given as a supplement to skimmed milk.

(*Comptes Rendus des Séances de la Société de Biologie, Paris 1932, N. 37*).

G. S.

### Sheep.

THE RESULTS OF EXPERIMENTAL CROSS BREEDING BETWEEN ÎLE DE FRANCE SHEEP AND THE APENNINE AND VAL DI CHIANA BREEDS. — The hybridisation aimed at increasing the yield in meat and wool of the indigenous sheep, among which the Val di Chiana breed is only an improved form of the Apennine breed. The cross-breds at birth had the same weight as the indigenous breeds but they inherited the early maturing capacity of the Ile de France sheep and at the age of 25 to 30 days they had the necessary weight for slaughter, whereas the indigenous breeds reached this weight only at 35 to 40 days. This is an advantage not only because of the more rapid production of meat, but also because of the economy in milk, which may be used sooner for cheese making. There are not available exact figures on the dressing percentage of the cross-breds, but they seem to be superior to those of the indigenous animals. Supposing that the cross breeds are sufficiently hardy the experiments may be regarded as completely successful.

(*Rivista di Zootecnia, Firenze 1932, anno 9, n. 9, p. 373 to 399*).

S. T.

### Other Animals.

BREEDING OF THE LLAMA, THE VICUGNA AND THE ALPACA IN PERU. — The *Pollettino della Laniera* (Biella 1932, Nos. 9-10) publishes a very interesting study by L. ARZANTERO on the breeding of these animals. On the basis of the work carried out by the Animal Husbandry Office of the Peruvian Government the writer discusses the methods of breeding and their present importance. The alpaca is bred for its wool, the vicugna for its wool and fur, the huanacos for wool, fur and leather and the llama as a beast of burden and for wool. The meat of all four species is used. Among the alpacas two different

breeds are distinguished : the common alpaca and the "Suri". It is now held that the present head of alpacas in Peru is 1.8 to 2 million, while in Bolivia there are 5,000 head.

The vicugna lives in the wild state in the regions where alpacas are raised. Formerly the cross between the alpaca and the vicugna, called "Pacovicunas", was preferred for its fine and abundant wool but at the present time this is being replaced by the Suri alpaca which is more easily raised.

The rearing of the llama, which was formerly so important, is now undergoing diminution. This results from the present supplanting of the llama by horses; railways also enter into competition. Llamas are liable to several diseases, especially mange. The increased consumption of meat makes it necessary to slaughter a large quantity of them. The writer considers that it will be necessary in future to select llamas with a view to wool and meat production rather than as beasts of burden.

F. M.

THIRD INTERNATIONAL DOG SHOW, FLORENCE, 24 TO 25 MAY, 1933. — Organised by the "Gruppo Cinofilo toscano" (Via Cavour 15, Florence).

## Agricultural Industries.

### Industries of Plant Products.

QUALITY AND YIELD OF SOYA OIL IN RELATION TO THE CONDITIONS OF EXTRACTION UNDER PRESSURE. — R. L. SMITH and H. R. KRAYBILL have studied the influence of the conditions of pressing on the characteristics of soya oil. It appears from the experiments that the oils are less dark in colour if the critical temperature of pressing (50°-60° C.) has not been reached; the oils obtained thus are clear and do not readily undergo dissociation.

The optimum temperature of extraction is related to the moisture content of the beans: with moisture content of 4-6.8% the optimum temperatures are respectively 65°-55°-50° C.

If the critical temperature is exceeded the oil is brown and altered.

(*Industrial and Engineering Chemistry*, Washington 1933, No. 3).

G. S.

USE OF HYDROCHLORIC ACID IN ENSILAGE (*Journal d'Agriculture Pratique*, 1932, 13 August. A. MAUPAS). — The writer recommends the use of hydrochloric acid for facilitating the conservation of fodder. For thoroughly moistening the fodder an average of 40 to 50 litres of solution containing 1.6 kg of hydrochloric acid (specific weight: 1.2) per ton of green material are needed. The water and acid should preferably be mixed in a wooden vat; a hose of hard rubber may be used for distributing the solution. In general the acid solution is applied as soon as 100 to 200 kg of fodder has been packed in the silo. The harmful microorganisms, such as the acetic ferments, are not able to withstand the acid so that the green fodder is partially sterilised by this method. This process also allows of the use of milk from cows fed on the ensilage for dairy and cheese purposes. The dairy industry would therefore find it in its own interest to generalise the use of hydrochloric acid in ensilage.

D. K.

### Industries of Livestock Products.

A STUDY OF BUTTERFAT VARIATIONS IN COWS' MILK. — Milk producers and dairy scientists alike are deeply interested in the fluctuations that normally occur in the fat test of cows' milk. These fluctuations are of two general types: the day-to-day variations which may be ascribed chiefly to the factors of individuality and environment, and the long-time trends which are influenced by season, age, stage of lactation, etc.

The experiments carried out by MACEVAN J. W. G. and GRAHAM V. E. reported in *Scientific Agriculture* (Vol. XIII, No. 5, January 1933, Ottawa) dealing with butterfat variations in cows' milk, include the extent to which milk varies in fat content; factors responsible for the long time trend in fat variations: influence of age of cow, the influence of stage of lactations upon fat tests; the percentage of fat in different portions of a single milking: comparison of first and last drawn milk, variation in milk from quarters of one udder; other possible factors involved in the day-to-day variations: variation in night and morning milk, frequency of milking, water consumption, concentrate rations, protein level, silage, brewers' grains; influence of variations on composite sampling. Of great interest are the conclusions:—

Day-to-day variations are so great and are so much influenced by the individuality of the cows that early experiments conducted with single cows cannot claim much significance.

The fat test tends to decrease during the first four months of the lactation period and to increase thereafter, especially during the last month.

The lowest average herd test was obtained in July and the highest in February.

Age of animal has but little influence upon fat test, with a tendency for lower levels during later life.

The first milk withdrawn from the udder is the lowest in butterfat and the stripings are the richest. The fat test may range from 1.0 to 10.0 % in the successive portions of one milking

The percentage of solids not fat remains relatively constant in the milk of a given cow.

The common cereal grains and grain rations used did not alter butterfat test significantly. Varying the proportion of protein in the cow's ration did not produce a significant and consistent change in the butterfat tests. Wet brewers' grains do not depress fat yield, and tend only to lower the test percentage when the yield of milk is increased. Heavy or light feeding of sunflower silage did not change the butterfat test in a significant manner.

Frequent sampling of milks is essential to accuracy in semi-official cow testing. Composite samples of milk as used by dairy plants should consist of daily aliquots.

Reduced allowances of drinking water and long intervals without water had the effect of slightly reducing milk and fat yield, but did not significantly alter the test.

Increased milk flow tends to lower the fat test and vice versa.

The secretion of fat in the udder and the secretion of the non-fatty constituent may be independent processes. E. G.

**QUANTITATIVE VARIATIONS IN VITAMIN A CONTENT OF BUTTER FAT.**—The butter fat from cows receiving grain and pasturage contains from 17 to 50 units of vitamin A to the gramme. Samples of butter taken during dry weather, when pasturage had been dry and scanty for a number of weeks, were still high in vitamin A.

The butter fat from cows fed cottonseed meal and hulls at the end of 15 to 16 months contained about 2 units of vitamin A to the gramme. Cows fed silage in addition to the cottonseed meal and hulls, produced butter fat containing about 2 to 12 units of vitamin A to the gramme; cows having access to a pasture in addition, produced normal butter fat containing about 33 units of vitamin A to the gramme.

Cottonseed meal and cottonseed hulls are very low in vitamin A. Sorghum silage is also low in vitamin A and, when fed for a long time as the only source of vitamin A, will produce butter low in vitamin A (FRAPS G. S. and TREICHLER R., *Industrial and Engineering Chemistry*, New York, Sept. 1932). E. G.

## Agricultural training.

AGRICULTURAL TRAINING AND THE RURAL TEACHER IN THE SARTHE, FRANCE. — The *Bulletin de l'Office de Renseignements Agricoles* of 1 January 1933 gives an extract from a report by the Academy Inspector of the Department of the Sarthe on the agricultural instruction given by the teachers in the continuation courses and in the elementary schools.

The information shows how much may be expected from the generalisation in France of close collaboration between the Departmental Agricultural Services and the educational authorities.

### I. — *Agricultural continuation courses.*

The classes generally take place twice a week after the evening meal. The programme which is outlined by the Direction des Services agricoles generally extends over two years. The courses are attended by young people of from fourteen to twenty years of age, about half of whom have the certificate of elementary studies. A certain number of young men continue to attend the courses on their return from military service.

To ensure a regular attendance the classes are given mainly in the form of talks and discussion classes in which the master and pupils speak in turn, exchanging ideas, asking questions and giving information. The master sees that the pupils keep notes of the principal teaching and the observations which have been made. At each class the master discusses the questions of the moment, commenting particularly on the articles published in the Departmental agricultural journal which is supplied free to the teachers.

The courses are completed by practical work on the land, excursions and cinematograph films

### II. — *Certificate of agricultural studies.*

The courses are recognised by the issue of a certificate of agricultural studies. The examinations are set by the Inspectors of elementary education.

### III — *Inspection of pupils' gardens.*

The inspection is carried out each year by a Commission consisting of an official of the 'Chambre d'Agriculture', the 'Directeur des Services Agricoles', the 'Inspecteur d'Académie and the 'Inspecteur primaire de la circonscription'.

### IV. — *Comparative agricultural tests.*

The Farmers' Society organises every year a competition consisting of two written tests between all the schools of the Department.

### V. — *Control of the Colorado beetle.*

Each week the teachers give a lesson or a practical demonstration on the control of the Colorado beetle.

G. R.

## Agricultural Research.

GOVERNMENT STATION FOR TRAINING AND RESEARCH IN THE DAIRY INDUSTRY, WOLFPASSING, AUSTRIA. — This Station was founded in 1930; its annual budget was about 800,000 *schillinge* in 1932. The staff consists of the Director, Dr. LIST, and 4 scientists. There are 6 chemical laboratories and 6 bacteriological laboratories.

The principal activities of the Station are concerned with various types of apparatus for pasteurisation, centrifugal separators, determination of the freezing point of milk, analysis of the various chemical products used for cleaning purposes in the dairy industry.

Practical and theoretical courses in all branches of dairying are held. A diploma is given at the completion of the 10 months' course. The results obtained in the research carried out at the Station are published in the *Oesterreichische Milchwirtschaftliche Zeitung* (see Fig. 1).

E. G.



FIG 1 Government Station for Training and Research in the Dairy Industry, Wolfpassing Austria

FEDERAL ESTABLISHMENT FOR THE DAIRY INDUSTRY AND BACTERIOLOGY, LIEBEFELD-BERNE, SWITZERLAND — This Establishment was founded in 1901 and serves the whole of Switzerland. The technical staff consists of 10 and the Director, Prof. R. BURRI. Teaching is not undertaken, except for certain lectures. The research is concerned principally with the maturation of cheeses. Chemistry, bacteriology and cheese-making are each provided with a laboratory. The funds are drawn from the Swiss Confederation (about 250,000 Swiss francs).

The research results are published in the *Annuaire agricole de la Suisse*, the *Schweizerische Milchzeitung*, the *Schweizerisches Zentralblatt für Milchwirtschaft* and the *Laitier romand*. Correspondence is effected in German and French, and if necessary in English and Italian. (see Fig. 2).

INSTITUTE OF ANIMAL HUSBANDRY AND CHEESE MAKING FOR SOUTHERN ITALY, CASERTA. — This Institute, which was founded in 1922, is subsidised by the Ministry of Agriculture and Forests (35,000 liras), the province of Naples (30,000 liras), the Pro-





FIG. 2 Federal Establishment for the Dairy Industry and Bacteriology,  
Lachenfeld Bern, Switzerland



FIG. 3 — Institute of Animal Husbandry and Cheese Making for Southern Italy, Caserta.

vincial Economic Council of Naples (30,000 liras) and the Bank of Naples (10,000 liras). The technical staff consists of 6 and the Director, Prof Giulio DALLA TORRE. The teaching programme includes theoretical and practical courses, the latter including cheese technology classes of special interest relating to the types of cheese made in Southern Italy, such as "provoloni", "caciocavalli", "scamorze", "mozzarella", "burrini", etc. The courses extend over 100 to 120 days.

The research work is concerned mainly with the micro-flora, the chemical composition of the "mozzarella", the fall in weight of "mozzarella" preserved in different kinds of brine, etc. There are chemical and bacteriological laboratories. The research results are published in various publications including the annual reports of the Institute. The future programme of technological work includes the improvement of the present products of Southern Italy with the object of obtaining more stable characteristics, the reduction of defects in the cheeses, and production of cheeses from the milk of cows, ewes and possibly buffalo. Correspondence is carried on in Italian, German and French (see Fig. 3)

R. G.

### Forestry.

THE PRESENT POSITION OF THE FORESTS IN THE UNITED STATES. - The latest official information with regard to the general situation of the Forests in the United States at the present time is the special Report to the Timber Conservation Board published on 30 January 1932 by the Forest Service. The facts and figures given below are to be found in this Report

According to Table 15 of the Report; the annual losses of all kinds are estimated as follows —

Losses due to cutting timber . . . . .	Cubic feet	14,495,308,000
Losses due to forest fires . . . . .	»	870,690,000
Losses due to other causes . . . . .	»	940,209,000
Total annual losses . . . . .	Cubic feet	16,306,207,000

According to Table 32 the estimate of total annual increment, including saw timber and cord wood amounts to only 7,040,000,000 cubic feet.

On pages 20 and 21 of the Report the question of losses by fire are dealt with. These show that, according to the 1930 figures, the protected areas, in the whole of the United States amounted in all to about 227 millions of acres, and that the public lands organized under some form of permanent management are being protected in what may be regarded as a satisfactory way. These lands include the National and State Forests, the County and Municipal Forests, the National and State Parks and also the Forests on the Indian Reservations

Unfortunately however there are in the United States about 190 millions of acres of forest, mostly privately owned, which have no kind of protection from fire at all. Each year nearly 130,000 forest fires over 45 millions of acres of forest land, i. e., about 9 % of the total forest area of the country

These figures, says Mr. C. M. RICHARDS, from whose Article under the title of « American Forestry Policy » in the *Journal of Forestry*, Washington D. C., 1933, N. 3, the above information is derived, prove that despite much expenditure of time, money and effort and despite all the propaganda work carried out in favour of forest conservation and for the training of public opinion in the United States during the last 10 years or more, the country's timber resources are being destroyed as quickly as they are produced.

R. W.

COMPREHENSIVE PROJECT FOR THE REFORESTATION AND GENERAL RECLAMATION OF UNPRODUCTIVE LANDS AND FOR THE REGULATION OF WATER FLOW IN THE UNITED STATES. — President ROOSEVELT has announced an impressive scheme, to include re-forestation, reclamation and bringing under cultivation, control of water power and re-establishment of farm work. For this great enterprise the President of the United States has chosen the whole watershed of the Tennessee river, involving no less than six complete States, Tennessee, Virginia, West Virginia, North Carolina, South Carolina and Georgia and part of three others, Kentucky, Alabama and Mississippi.

The President believes that this scheme will ultimately provide employment for 200,000 persons and that it should be possible to make an immediate start with forestry work, giving occupation to from 50,000 to 70,000 men in tree planting, cutting fire lines and carrying out a general rehabilitation of the existing forests.

Thus the scope of the « Tennessee Valley Project » will embrace, in addition to re-afforestation plans, schemes having the following purposes: establishment of flood control basins in the upper valleys; development of water for power for use by States, cities and farms; elimination of the unprofitable marginal lands from agricultural use; reclamation of fertile bottom lands for purposes of future cultivation; control of the waters of the great river Mississippi together with the improvement of navigation.

The programme further contemplates the purchase by the Government of some of the forest lands and of those marginal areas which will no longer be utilised for agriculture.

Based on article published in *American Forests*, Washington D. C., March 1933.

R. W

FORESTRY INSTITUTIONS IN POLAND. — The formation of Societies among Polish foresters was in the past a very difficult matter in consequence of the differing political systems to which the lands constituting Poland were subject. Notwithstanding these difficulties, however, a consciousness of professional solidarity was soon developed and took practical shape at an early date in the country, dating back as far as 1818, after the establishment of the Higher Forestry School at Warsaw which belonged to that part of Poland which was annexed to Russia. The outward sign of this solidarity was the Review known as *Sylvan*, which from 1820 onwards was supported by all the best forestry experts of the day.

In the provinces belonging to Austria the first signs of forestry organisation were to be seen in 1850. In 1888 the *Société Forestière de Galicie* (Forestry Society of Galicia) was established at Lwów which, under the title of *Société Forestière Polonaise* (Polish Forestry Society) has been a rallying point for foresters and forest owners continuously from that year to the present day.

In 1866 the foresters in private employment in the province of Poznan, for State service in which, being under Prussian control, they were ineligible, formed jointly with the forest owners an organisation known as the *Section Forestière de la Société Centrale Agricole de Varsovie*, or Forestry Section of the Central Agricultural Society for the Grand Duchy of Poland.

In spite of considerable difficulties of a political order the First Forestry Congress of Poland for all the provinces took place at Cracow in 1907.

In 1910 the Polish foresters established, under the form of a Forestry Section of the Central Agricultural Society of Warsaw, a Society, in which foresters' and forest owners combined under the title of the « Subscribers to the Polish Forester » (« *De-snik Polski* ») and this body survived to the time of the reconstitution of the present Poland.

In the Autumn of 1918 the " Syndicate of Polish Foresters " was founded at Warsaw and was responsible for convening the Second General Congress of Polish Foresters at Warsaw, which instituted the future general forestry organisation, which took the name of the Union of Polish Foresters. In 1922 the Statutes of the Union were modified and the Union is now known as the Union of Professional Polish Foresters and its present 7,000 members are all trained and qualified forest officers.

In order to safeguard their personal interests and to introduce a normal type of forest management on their properties, the owners established their own Union, which is constituted as a Central Department for the Provincial Unions.

The forest managers for the most part belong to the Professional Foresters' Union, though a certain number have formed a special Union of " Forest Guardians ".

The various types of Polish Forestry institutions have founded a series of forestry societies: (1) the members of the Higher Forestry Schools of Warsaw, Lwów and Poznan have their Federations of former students, whose activities are co-ordinated by the Permanent Joint Council of Former Students of the Polish Academies with head-quarters at Warsaw; (2) in connection with the three Foresters' Schools above mentioned there are students' associations, known as Foresters' Clubs, which provide further instruction, provident societies, etc.; (3) Similar associations, mainly concerned with provident schemes are also connected with the three secondary and five primary Schools of forestry.

It is claimed that these Associations of Students in the Forestry Schools carry out a very effective educational work and that, largely as a result, the young entrants to professional life as forest officers are a particular well trained body of men.

(Information obtained from the *Bulletin Forestier Polonais*, the Quarterly Review of the Professional Union of Polish Foresters, Warsaw, 1932, Nos 1-2).

WOODEN OR IRON POSTS IN RAILWAY ELECTRIFICATION . — It is proposed within the next few years to electrify the railway system in Sweden. Hence a writer in *Skogen* (Stockholm 1933, No. 1) discusses the question, so important from the point of view of forestry in its industrial aspects, of the relative advantages of using wood or iron in the construction of the posts required.

In Sweden iron posts are employed to hold the cable for transmitting electric power where it is at present used, while in Norway, which has had a more extensive experience of railway electrification, wooden posts are frequently utilised. In Sweden however extensive use has been made of wood in the construction of lines conveying electric power in other connections and even when the current has been very powerful, wood has always proved its superiority as compared with metal and reinforced concrete. Here of course reference is made to wood treated with creosote and in the proportion of 100 kg. per cubic metre.

Using the estimates prepared by the State railways, the writer gives the following table to show the difference in the price of wood as compared with the price of iron for the construction of these posts.

	Iron post	Wooden post
Material . . . . .	70 Kronor	20 Kronor
Fitting (basis of reinforced concrete for iron post) . . . . .	70 "	10 "
Insulator (excess of the price of insulator for iron post over that for wooden post) . . . . .	20 "	— "
Painting (for iron post) . . . . .	20 "	— "
Total . . . . .	180 Kronor	30 Kronor

As it is necessary to renew the painting of the iron posts every 6 years, which increases the price in the above estimate by about 60 Kronor, the price of wood as compared with the price of iron is in the relation of 1 to 8.

Naturally these figures will require modification, if it is necessary to arrange the wooden posts nearer together than the iron. As to respective durability, the writer says that it is difficult to make any safe statement, but he quotes examples of posts of creosoted wood which were none the worse for service, after a life of 30 years and more, without any special care, while on the other hand in certain cases iron posts were affected by rust after a similar period, possibly as the result of lack of proper attention.

In the light of the above estimate, it would appear that, as a material, iron is only to be preferred when, apart from motives of economy, there are special reasons for its use. It is necessary however that the matter should receive very careful attention from the representatives of the forest industry, who have important interests to safeguard in view of the development of railway electrification.

R. W.

## BOOK NOTICES \*.

### Land Development

BUSSE W. Das italicenische Meliorationswesen. (Bonifica integrale), Heft I *Berichte über Landwirtschaft*, Berlin 1933, Verlag Paul Parey, 74. Sonderheft.

Outside Italy until quite recently there has been little in technical literature of a clear and comprehensive nature regarding Italian land development (bonifica integrale) and the way in which it has been carried out. This shortcoming has made itself increasingly felt as interest in the Italian schemes of land development has gained ground abroad and as it has become increasingly realised that the problems are closely bound up with specific natural conditions which increase the difficulty of their solution. The author, who is Delegate of Germany at the International Institute of Agriculture and Agricultural Expert at the Germany Embassy in Rome, has studied Italian agriculture for many years. It is only after careful preliminary study that Mr. BUSSE has undertaken in the present work to approach the problem of the "bonifica integrale" with special relation to geography and more particularly to agriculture.

The work which contains a large number of facts expressed in a concise form is subdivided into the following Sections: I. Introduction – II. Legislation – III. Organisation and Execution – IV. Description of the agricultural improvement schemes. The writer has been obliged to abandon his first intention of publishing the parts of his book in the order given owing to the continued delay of a publication which has been announced for a considerable time and is to contain the text ("testo unico") of all the laws relating to agricultural improvement in Italy.

The result is that the first number, which has just appeared, includes the Introduction and a first series of descriptions of the land development schemes. The Legislation, Organisation, and Execution of the improvements and a second series of Descriptions will appear later in a second special number of the *Berichte über Landwirtschaft*. The writer shows in the introduction how under the impulse of a variety of natural forces the surface of the Italian peninsula has since remote times been submitted to continuous transformations due to many factors, such as the disintegration of the mountain

massifs as a result of landslides and erosion, to the formation of alluvial soils together with cones of detritus where the mountain waters arrive in the plain and at the mouths of the rivers along the coast, to the raising of the river beds in consequence of the continual deposit of alluvial matter and to frequent earthquakes and volcanic phenomena.

Transformations of this nature often influence in a decisive fashion the hydrological conditions of whole countries and by the fault of man who often allows the mountains to become denuded of forests, these unfavourable hydrological conditions may be made worse. Thus especially in the south of Italy the greater number of the water courses, which are periodically dry, pour into the valley during the rainy seasons considerable masses of water which carry with them whatever they find in their path.

An inevitable consequence of certain modifications of the state of the soil and of the water table, or a manifestation which accompanies these, is the outbreak and spread of malaria which paralyses the life and work of the sedentary populations.

It is in consequence of the relation which exists between the disintegration of the mountain masses and the formation of alluvial soils and cones of detritus, between deforestation and disturbance of the water table, between these phenomena combined and the outbreak and spread of malaria, that works of agricultural development in Italy have developed and have given rise to the present vast schemes of land development.

This concept of "bonifica integrale" is much wider in scope than the usual schemes of agricultural improvement such as have been developed or introduced in other countries. It embraces works of drainage and irrigation, mountain improvements and re-afforestation, the agricultural after-development of the land and, finally, problems of land settlement. It is only in recent years that the term "bonifica integrale" has come to include all these meanings. At the beginning, "bonifica" was limited to the draining of marsh lands, to the protection of the countryside against damage by flood and to the control of malaria; the connection which exists between the destructive activities of mountain waters and the disturbance of the water table in the plain and the indispensable value of the auxiliary help of forestry was realised much later.

All these different groups of works and others of similar nature, have been combined into one all-embracing whole by the "Mussolini law" of 24 December 1928; this law gave its present form and force to the idea of "the complete utilisation of the soil". It has also for the first time created a great programme of long term financial assistance and by this means conferred on the whole land development work the character of an organic unit, a great number of old and new funds have been brought together into this financial plan which aims at realising eventually the "ruralisation of Italy". The social problems and those of the national economy have been coordinated with the problem of population. It was necessary to oppose the excessive immigration into the towns, and also emigration, to improve the health of the rural population and to increase agricultural production in proportion to the increase in population.

It would be to misunderstand completely the significance of the works of "bonifica" in Italy if economic criteria were used to appraise the value of these works which are intended rather to ensure the well-being of future generations.

In the practical solution of this problem the State finds strong support in the necessities of the masses only too glad to find the opportunity to work and to obtain their independence on the land. The agricultural labourer looks forward to the possibility of one day attaining a sedentary life. The farmer desires to acquire the ownership of his land. There is no country in which questions of agricultural improvement and land settlement are more closely linked together than in Italy, where nearly everywhere makes itself felt the need for land to cultivate, a need which thousands of men genuinely wedded to the soil hope to satisfy.

If one considers the work imposed by agricultural improvement in Italy from the point of view of its importance for the State one sees that the "bonifica integrale", as it is envisaged in the programme of Mussolini, scarcely finds its counterpart in the history of agriculture in any country, with the possible exception, according to the author, of the works which Frederick the Great attempted, but on a much more restricted area.

As has been said above Mr. BUSSE has followed the introduction to his work by a series of descriptions of particular land development schemes, namely those of Val Tidone, Canale Marzano, Canale Lunense, Maccarese, the Pontine Marshes, Agro di Fondi, Garigliano and Pantano di Sessa, Basso Volturno, Sele and Paestum, Valle di Diano, Metaponto Novasiri and Sant'Eufemia. The descriptions, more or less detailed, relate to the geology, geography and topography and take into consideration also hydrographic conditions. The land settlement and agricultural schemes that are concerned in each of the "bonifica" works are described.

The work contains 6 drawings and 20 photographic illustrations.

H. J. H.

### Plant Physiology.

MONNIER-DUMONT Andrée, *Etude de la concentration des liquides cellulaires végétaux Variations saisonnières de cette concentration*. Cahors 1932, Imprimerie typographique A. Coueslant Ed., 135 p., XI tableaux, 5 graphiques.

In the first part of this work the writer gives a very clear account of the methods of extracting and measuring the osmotic pressure of plant cell liquids.

The second part is of great importance and is devoted to the study of seasonal variations in the concentration of plant saps. A bibliography including 164 references concludes the work of which the general conclusions are as follows —

Plant cell saps have not a characteristic osmotic pressure; it varies in accordance with a large number of factors. These variations are not related to a given plant but rather to the stage of development of this plant. Also at a given time the  $\Delta$  of different plants at the same stage of growth and in identical conditions are much more similar than the  $\Delta$  of the same plant at different seasons of the year and sometimes even at different hours of the same day. It results that for plants grown in the same conditions the variations in osmotic pressure are very similar. They are very high in the buds of deciduous trees, diminish during the growth of the young leaves, then increase during summer and autumn until the fall of the leaves.

The  $\Delta$  of evergreen leaves varies according to an annual cycle. It is maximum in winter in the old leaves, it diminishes in spring to a value very close to that of the new leaves, then it increases regularly in the old leaves and in the young leaves until winter.

From a chemical point of view the writer concludes, in agreement with DIXON and ATKINS, that variations in osmotic pressure are due mainly to the fluctuations undergone by the soluble carbohydrates.

G. R.

### Fruit Wines.

KROEMER KARI, & KRUMBHOLZ Gottfried, *Obst- und Beerenweine*, 292 p., 99 fig. Braunschweig 1932, Verlag Serger & Hempel.

This treatise on the manufacture of fruit wines is intended in the first place to serve as a guide to those concerned in large scale wine manufacture. It will however also

be a useful source of information for all those interested and for whom wine making constitutes an accessory or purely domestic occupation.

In view of the great importance of the utilisation of fruits for making beverages and the numerous difficulties in technique entailed in the work an exhaustive discussion of the question from both practical and scientific standpoints is particularly welcome. After a description of the microbiological bases of fermentation the work deals with the following subjects: process of manufacture with special reference to the irregularities in the process and the means of avoiding them; special characteristics of the various fruits serving as raw material; necessary or useful machines or instruments (with numerous illustrations); a long list of dealers.

The book is usefully completed by an account of the German legislation concerning the manufacture of and commerce in fruit wines.

N. G.

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# MONTHLY BULLETIN

OF

## AGRICULTURAL SCIENCE AND PRACTICE

### EDITORIAL

#### **Transport of Farm Products.**

Except in the case of farms on the outskirts of urban districts, the transport of farm products and their marketing in good hygienic condition raises questions of technical import, the solution of which is of fundamental importance.

The one-time idea that the concern of the farmer is solely with production and comes to an end with the harvest is finally dead and buried. As the means of transport are increasingly perfected new possibilities are opened up for the farmer, provided that his products which often have to be sent long distances from the place of production reach the consumer in a state of perfect preservation.

There is thus a complex problem of storage to be solved with every consignment and, as the market price depends strictly on the conditions of storage and transport, there are plenty of difficulties in the way of a satisfactory organisation. Not only do the handling, packing and transport depend on the nature of the product and vary with local resources and customs, but it is necessary to take into account also the conditions of climate, season, etc., the distance to be covered and the mode of transport to be adopted.

The necessity of supplying the consumer with products of a uniform quality, without defects and having all the desirable characteristics of freshness, makes it essential to reduce to the minimum the time occupied in handling and transport and to retard the process of physiological maturation by the intelligent use of artificial refrigeration.

We do not wish to enter here upon a discussion of the methods of applying artificial refrigeration to the storage of farm produce. Whether pre-cooling is effected on the farm or in the collecting or packing centres is immaterial, as the aim is the same. The question of land transport may however be solved in different ways. If it is allowed that for very great distances transport in refrigerator wagons by rail is the most advisable method, it would now appear that for medium and short distances the future is for road transport.

This would explain the interest now being accorded in many countries, and more particularly in the United States, to the construction of automobile refrigerator cars for the transport of food products from the farm direct to the markets. The production of suitable equipment for this purpose is considered at the present moment in the United States as offering important possibilities for the automobile factories affected by the crisis.

The problem of the special construction of the body of refrigerator camions and camionettes has recently been discussed in detail by M. WILLIAMS and J. W.

CARL in the *Journal of the American Society of Automobile Engineers* (December, 1932). In the construction of the body of these cars it is necessary to take into account the quantity of cold to be produced, the most satisfactory type of thermic insulation and the available insulating materials. As regards the production of the low temperature, the refrigerator machines may be worked by electricity, by direct take-off from the motor engine or by a special petrol engine. Another very important question is that of the space occupied in the body by the generator of cold.

Studies of this type put the question before the automobile builders in a concise form and indicate the new field open to them. It is in fact clear that the construction of refrigerator camions of a strong type and utilising a cheap fuel is capable of introducing a very rapid improvement in the fresh food supply of the towns.

It must be foreseen also that in the new competition which will soon arise between the road and rail for the rapid transport of farm products to the centres of consumption, the tendency will be increasingly in favour of road transport.

Prof. GEORGES RAY.

## ORIGINAL ARTICLES

### Currants in Greece.

The Corinthian grape owes its name, corrupted in English into "currant", to the fact that it was in the neighbourhood of Corinth that it was originally grown in the XIII century. But to-day the cultivation of the grape is no longer restricted to this region which was first developed by the Frank princes of Morea. It now extends along a narrow strip of territory, varying from 2 to 10 kilometres in width, along the southern shore of the Gulf of Corinth, then along the western coasts of the Peloponnesus over an area of about 550,000 *stremmes* (55,000 hectares). Before the union with Greece of Macedonia and Thrace, which are producers of excellent tobacco, the currant was the principal article of Greek export, (180 million Venetian pounds or 86 ½ million kilos per annum).

This product, of which the annual production reached 100 million kg. in 1931, is of both nutritive and tonic value. The analysis, carried out by KRAUSS, shows the following composition.

Sugar . . . . .	65.74 %
Albumin . . . . .	2.05 "
Fat . . . . .	0.61 "
Free acids . . . . .	1.53 "
Various non-nitrogenous substances . . . . .	9.56 "
Inorganic substances . . . . .	1.64 "
Cellulose and peptines. . . . .	1.75 "
Water . . . . .	20.12 "

The food value is 4999 calories per *oka* (1,286 kg.) ; and the grapes have a very thin skin which is rich in vitamins. Moreover, currants (of which 4 lbs of

fresh fruit are required to produce 1 lb of dried fruit) are very rich in iron and are an aid to digestion. The Greek peasants use currants almost exclusively for their food, and in Germany and Holland a bread made of 70 % dough and 30 % of currants is a much used and health-giving food.

The finest fruit is produced in the region of Vostitza (Aighion), along the coast of the Peloponnesus. It is for the most part dried in the shade, which is a slow and costly method but results in a shiny fruit. In the other regions and for inferior qualities, sun-drying is most practised, the fruit being spread out on trays in the open directly after harvesting. No artificial drying method is used, as only the sun's rays are able to conserve in the dried fruit the aroma which gives it its market value. If the weather is favourable about ten days are required for drying, but if there is rain while the fruit is exposed naturally there are great losses.

Since the end of the XIII century the currant has been a recognised commodity in world trade and its consumption has continuously increased. Towards the middle of the XVI century the acreage under currants was only 550 hectares and the production was only 5½ million Venetian pounds (2 643 metric tons). Although at the beginning of the XVIII century the production, including that of the Ionian Islands, reached 28 million pounds, the War of Independence and its disasters reduced it to 1 999 tons by 1851. In 1830 only, with the accession of Capo d'Istria, it began to recover, though the cultivated area did not exceed 1 000 hectares.

But such was the impulse given to currant growing that from 1831 to 1851, that is within a space of 20 years, the production passed from 2 300 to 27 000 tons, and in 1877 reached about 83 000 tons, and later about 168 000 tons.

This was the golden age of the currant, the French vineyards being afflicted with phylloxera, which obliged the French wine industry to have temporary recourse to foreign supplies. This period of prosperity ended in 1892 and gave place to a crisis which is easily understood when one realises that only a part of the production was consumed on the spot and that the local spirit industry, then in an embryonic state, absorbed only a fraction of the dried or fresh grapes.

Faced with an overproduction of about 38 000 tons it became necessary in 1895, in order to prevent a slump in prices and in the impossibility of inducing the vine growers to change the crop, to resort to an artificial process. The export trade was restricted by means of a compulsory reserve stock (35 %), and later by levying a land tax in kind.

The withheld stock and the land tax were the principal resources of the 'Currant Bank', which was founded the same year; but in consequence of the lack of parallel measures for ensuring the marketing of the accumulated stocks, the situation instead of improving became worse and in 1859 the failure of the Bank involved not only the individuals concerned but also the whole public economy. This very serious situation made it necessary to resort to drastic measures. For this reason there was formed in August 1906 the 'Privileged Company for Currant Growing and Marketing' and the 'Company for Wines and Spirits'. The latter sold large quantities of grape pulp in Italy, Germany and Mexico, produced and exported to England concentrated must and introduced

into Greece the judicious use of denatured alcohol for purposes of lighting, heating and as motor spirit.

It was largely owing to this that the Privileged Company, which was expected to purchase currants in any quantity that might be offered at the rate of 115 drachmas per 1000 Venetian pounds and to pay a yearly sum of 10 000 pounds sterling towards propaganda and publicity work, was able for 15 years more or less to fulfil its obligations. And, when in 1925 the Government decided to exert its right to terminate the convention with the Privileged Company before the expiration of its full term, it was because after the Armistice conditions had completely changed. A new situation required a new organisation. Rather than again to entrust the currant trade to a Company which through this trade had exerted a considerable influence on the national economy, or to make it a public service, that is to assign the control to the State, it was preferred to take the middle course of forming an independent organisation which should be partly under State and partly under private control. Thus at the end of 1925 the 'Independent Currant Office' was formed, which was succeeded later by the 'Currant Department' (Comptoir du Raisin de Corinthe), on which were represented 700 cooperative organisations.

As a result of the systematic work of these two organisations the export trade in currants has in recent years been able to develop to 73 million kg. in 1930 and 66 million in 1931, representing an approximate value of 750 million drachmas annually. The greater part of this production is exported to England for use in confectionery, but some goes also to the Netherlands, Germany, etc. Moreover, thanks to the combined efforts of the 'Comptoir' and the Bank, the local consumption of fresh and dried currants has considerably increased, this increase being made necessary by the relative loss from alcohol for burning due to the increasing use of electricity.

*(Communication from the Ministry for Foreign Affairs of Greece).*

## **Review of the More Important Publications on Rubber Cultivation Issued in 1932 \* (Part I).**

### **BOTANICAL INVESTIGATIONS**

The artificial pollination of *Hevea* gives always a low percentage of success. In order to establish whether this is due to an inferior quality of the pollen, experiments on the germination of the pollen in an artificial medium were carried out by RAMAER (1).

In an aqueous solution of saccharose and glucose no germination at all occurred, the contents of the pollen grains being invariably extruded from one of the pori. But agar with 15 % to 23 % cane sugar or 10 % to 12 % glucose gave a good germination. Between these limits no distinct optimum could be found ;

\* For previous reviews, see this *Bulletin* 1932, No. 5, pp. 163-170 and No. 6, pp. 207-223. (1), (2), etc. The list of publications consulted will be found at the end of Part II.

concentration below 15 % and over 23 % of saccharose gave less satisfactory results. Glucose gave somewhat better results than saccharose.

The germination of pollen from 38 clones was investigated on 23 % saccharose agar. The majority of the germination percentages were higher than 50 % ; the highest percentage amounting to about 85 %, the lowest to 25 %. The conclusion is, that *Hevea* pollen on the whole possesses a good germination power and that the poor successes of artificial pollination are as a rule not caused by an inferior quality of pollen.

It was ARISZ who discovered that the latex grows thinner while flowing out. FREY-WYSSLING (2) subjected the problem of this dilution to an extensive investigation; he found that this " dilution reaction " could give important indications as to what occurs in the latex tubes during the flow. The general course is that directly after the opening of the tapping cut the water content increases rapidly (for instance from 60.9 % to about 66.5 %), then becomes rather constant, culminating in an indistinct maximum (for instance 96.8 %) and finally decreases slightly (for instance to 66.3 %). The cause of this phenomenon is still uncertain, but it may be accepted that during tapping water is absorbed from neighbouring tissues by the latex-vessels. The curve of the dilution varies a little in the same tree and different trees behave more or less differently, but the general course of the dilution is always the same. Only in trees with a poor flow the dilution may be very small or even negative, while in high yielding trees a wave-like course of the dilution curve was found.

On a piece of bark, isolated by deep grooves, the increase of dilution was much greater than on not isolated bark, and dilutions as high as  $\frac{2}{3}$  of the original volume of serum were found.

The physical laws which govern the flow of the latex provide a means of calculating the approximate extent of the area from which the latex of a tapping day is obtained.

The flow depends on the diameter of the latex tubes, the diameter of the anastomoses between the tubes, the breadth of the medullary rays, the vertical distance between 2 medullary rays, the number of tubes per mm. in horizontal direction, the number of medullary rays per mm. in horizontal direction, and the number of tubes between 2 medullary rays. From these data FREY-WYSSLING calculated that the resistance met by the latex when flowing in the horizontal direction is about 9 times as great as that encountered when moving in a vertical direction. This result allows of forming a conception of the lines of flow of the latex when it is drawn off. In *fig. 8* of his publication (2) the author gives an illustration of the course of the lines of flow according to this conception.

It is of the utmost importance for the practice of tapping to ascertain the exact size of the bark area from which latex flows by tapping. For tree Av. 211 the author calculated this area in the following way: the diameter of the tubes before tapping was  $\frac{5}{4}$  of the measured diameter ; the bark of Av. 211 contains 35 layers of latex tubes, of which 4 in the innermost zone are not cut ; by the tapping knife; under each c. c. of bark there are therefore available for tapping 0.064 c. c. of latex. The average yield of this tree is 277.5 c. c. latex of which 21.7 c. c. are diluting fluid, leaving 255.8 c. c. original latex. This quantity is

contained in  $255.8 : 0.064 = 4000$  c. c. of bark. However the tubes are not entirely emptied by tapping and it may be assumed that they loose less than half the content and that the quantity involved in the movement of the latex is at least 8000 c. c. Further, assuming that the latex flows sideways from a distance which is  $\frac{1}{9}$  of the distance of the vertical flow, the conclusion is that the latex flows in a vertical direction over a distance of about 123 cm. and in a horizontal direction of over about 14 cm. This means that, apart from the tapping panel of  $\frac{1}{3}$  or  $\frac{1}{2}$  of the circumference of the tree, an important part of this circumference (about 28 c. c. in the case of tree Av. 211) takes part in the latex flow.

The general conclusion that the latex flows to the cut from a distance of about 1 m. under the cut is in accordance with the observations which BOBILIOFF published in 1921.

The author explains the dilution of the latex during flow by the increase of the suction-power of the latex tubes exercised on the neighbouring parenchyma cells. After the jump-like initial increase the subsequent changes of the osmotic condition in the tubes will be of a more gradual nature, whilst the area where the original equilibrium was disturbed will gradually extend.

The dilution reaction has sometimes, especially with high yielding trees, a wave-like course, which may be explained in this way: that the parenchyma cells as a result of the shock which they endure give off too much water and subsequently supply this deficiency again from the tubes. As soon as the difference in suction power becomes too small to suck water from the parenchyma, the concentration of the latex begins, and this takes place before the flow has ceased.

It follows that the bark parenchyma is a very important factor in the normal course of flow: by means of the *dilution reaction* it decreases the viscosity of the latex and contributes to an easier outflow, and by means of the *concentration reaction* it contributes to a timely cessation of tapping and to a speedy restoration of the original conditions in the latex tubes.

The author suggests that the phenomenon of the "running dry" of the cut is a consequence of the fact that the protoplasm of the latex tubes is damaged as a result of the dilution reaction.

"Brown bark" is accompanied by an abnormally strong dilution reaction. The author suggests that damage to the parenchyma cells is the cause of this disease.

It is demonstrated that root pressure does not play a role in the latex flow. The investigations provide some indications for the selection of drastic tapping systems. In double-cut tapping systems the distance of one metre between the cuts may be regarded as a minimum and with some trees, especially with high yielders, the distance must be larger. HEUSSER and HOLDER, have already put forward this opinion. But it is considered desirable to study the dilution reaction for each clone in comparative tapping experiments with single and double cut tapping systems.

For tapping to death the author considers the system of 2 cuts over  $\frac{1}{3}$  as more satisfactory than the system of 2 cuts over  $\frac{1}{2}$  circumference.

Finally the author draws attention to the fact that in the experiments of HEUSSER and HOLDER with the new double cut tapping system (*Archief voor de*

*Rubbercultuur*, 15<sup>e</sup> jaargang, 1931, p. 246), the dry rubber content of latex, obtained with the system of  $\frac{1}{3}$  cut, was for all clones higher than that of latex obtained with the system of 2 cuts over  $\frac{1}{4}$  (in 1929 the difference was 2 % to 5 %, in 1930 3 % to 4 %). This fact gives an indication that with conservative tapping in consequence of the insufficient increase of the mobility of the latex, a lower yield is obtained than the tree is able to give. The dilution of the latex may therefore be considered to be a factor of great importance for the practice of tapping: on the one hand the dilution is required to improve the mobility of the latex, but on the other hand it may become dangerous as a direct or indirect cause of bark diseases, if it is too much increased.

In a lecture at the Annual Conference of the "Incorporated Society of Planters" MANN (37) gave an account of our present knowledge of the physiological process of latex production in the unwounded *Hevea* plant and of the processes connected with the production of latex from the tree in response to the operation of tapping. The lecture contained a synopsis of the published investigations of FREY-WYSSLING, SHARPLES, BELGRAVE and others.

#### GENERAL CULTIVATION.

WHITFORD (3) brought to public attention a system of *Hevea* cultivation, applied by BIRKMOSE on the Shanghai Pahang Estate. In this system «forestry methods» are used as much as possible; the upkeep is simplified and weeding is not done; only certain weeds that are considered to be deleterious to the soil, especially *alang alang* (*Imperata*), the so-called stag moss (*Lycopodium*), broken fern (*Gleichenia*), and also *Melastoma* are removed. A "changkol" or hoe is never used, neither for soil tillage nor for supplying operations. The selective weeding is carried out by hand; plants are either pulled out or cut off near the ground. Among the plants which are allowed to grow up *Hevea* seedlings play an important role and a more or less dense stand of young *Hevea* trees develops underneath the canopy of the mature ones. In slightly open places they develop a vigorous growth, and, if left to themselves and by natural thinnings, a few of these trees will eventually fill the openings and become tappable trees. Eventually these trees are budded with buds of selected clones.

In opening new areas again the simplest forestry methods are used. The jungle is felled and enough burned to allow the necessary operations. Contour paths are cut and are planted at stake with *Hevea* seeds at close intervals. After one year a stand of some 1000 trees or over per acre is obtained. When the trees reach proper size the most vigorous ones are selected for budding.

The system is claimed not only to be very cheap but also to improve the soil considerably by the natural cover of weeds.

In Netherlands India the "forestry system", as described by WHITNEY was not received with undivided sympathy. The Rubber Experiment Station of West-Java issued a short article (4) to warn the planter not to expect too much from the BIRKMOSE system. It was pointed out, that the fields, treated with the "forestry system", require more care than one would think at first sight: some selective weeding must be done, the good *Hevea* trees must be found by



experimental tapping, just as in rubber fields cultivated in the ordinary way, and the young trees in the open spaces have to be budded. Moreover the method is not new, as it has been tried already on more than one estate in Java, although in a slightly different way from that of BIRKMOSE.

From different sides it has been pointed out, that on many soils it is impossible to obtain a suitable undergrowth when the planter relies entirely on what will grow spontaneously and only interferes with some selective weeding. This may, for instance, occur in places where the *alang alang* (*Imperata arundinaceae*) is prevalent. It has therefore been claimed by various writers that the forestry method has often to be combined with the planting of leguminous plants. 's JACOB (5) described such a system – “artificial rubber forestry” – by which a luxuriant undergrowth was obtained by planting the cover-plants *Centrosema pubescens*, *Calopogonium mucunoides* and *Crotalaria* (sp.?). After some time the *Centrosema* had completely superseded the other two and in 5 years a very backward and diseased 5-year-old *Hevea* field was transformed into a healthy and good-yielding one.

In other cases the creeping cover-plants were helped by shrubby leguminous plants, such as *lamtoro* (*Leucaena glauca*) ('s JACOB (5)), or by leguminous trees or other shade trees; in the last mentioned case *Albizzia Moluccana* is a favourite, also *Derris* (*Deguelia microphylla*) and *Adenanthera microsperma* (6) (7).

VAN HEUSDEN (7) described the results obtained in this way on the Government Plantation “Bolang Togi” in Java in different fields. Three cases may be mentioned here.

*Field 1, planted in 1906-8* In 1921 *Albizzia moluccana* was interplanted, in 1928 and 1929 *Centrosema pubescens* and *C. Plumieri* were planted, and in 1930 the upkeep was stopped. In 1932 the undergrowth consisted mainly of different grasses, especially “djampang mangoeng” (*Ischaemum timorense*), also many *Melastoma* plants; very few *Hevea* seedlings had grown up and these few had developed poorly. The appearance of the original *Hevea* trees was unsatisfactory.

*Field 2, planted in 1918.* Clean-weeding was applied till 1924, when selective weeding was introduced; in 1928 *Centrosema pubescens* and *C. Plumieri* were planted. In 1930 field work was stopped. In 1932 a nearly pure vegetation of *Hevea* seedlings had developed, the seedlings stood close together and had almost superseded all other vegetation, including the *Centrosema* which had almost disappeared under the heavy shade. The appearance of the original *Hevea* trees and of the young seedlings was excellent; no die-back nor other diseases.

*Field 3, planted in 1918.* When the upkeep was stopped in 1930 the fields were covered with a fine layer of *Centrosema*. In 1932 a mixed undergrowth was found of *Hevea* seedlings, wild banana (*Musa* sp.), *Ficus fistulosa*, *Biophytum sensitivum*, *Achras megalocarpus*, *Centrosema*, etc. The appearance of the *Hevea* trees was excellent. No diseases present.

Some planters made objections against the forestry method. NIEUWPOORT (8) was of the opinion that the forestry system may be useful in Malayan plantations where the soil has been washed away and where a new humus layer has to be formed, but in plantations where the soil has been well preserved the advantages do not, in his opinion, counterbalance the disadvantages, namely, the hinder-

ing of the supervision of the fields and of the tapping operations, and the slow drying of the tapped panels.

The planter Z (9) is against all shrubby plants in the rubber fields, either leguminous or others; he points out the difficulty of cutting them back regularly and the overgrowing of climbing plants, which make supervision difficult and give a shelter to wild hogs. He sees more advantage in the application of selective weeding and planting of creeping leguminous plants—first *Calopogonium* and *Pueraria*, and later *Centrosema pubescens*. But for a successful application of this system the *Hevea* trees must not be planted closely and they must be well thinned out so that the creeping leguminous plants get sufficient sunlight. He objects especially to the system of VAN HEUSDEN and VOLLEMA who keep shrubby leguminous plants in the fields. To this objection the two investigators mentioned replied (10) that their system is only intended for fields with rather closely standing trees and in such fields they see advantage in a forestry system with shrubby plants; for fields which are strongly thinned out they suggest the planting of a catch crop, as for instance the soy bean. Against the observations of NIEUWPOORT they observe that it is true that the forestry system has been too much praised by some people but it is not correct to reject it entirely and to see advantage only in the planting of leguminous plants. They claim that the extensive method of cultivation undoubtedly has advantages.

It is also the opinion of the Rubber Research Institute of Malaya (11) that the rejuvenation scheme of BIRKMOSE will not have the same success on all kinds of soil. The chance of success is greater in fields where the soil is in good condition than on exhausted land. From the point of view of soil management the system is considered eminently sound “for it is certainly correct to say that the soil requires more shade and more organic matter than is given by the average stands of rubber”, but it is from the point of view of crop management that criticism may be expected. As a limiting factor with reference to the adoption of a forestry method the Rubber Research Institute considers the question of root disease.

The forestry system in Malaya has also been discussed by HAINES (12) and by RASMUSSEN (13).

#### PLANTING AND THINNING OUT SYSTEMS.

On the very fertile soils of East Java, especially on those of the Residency Besoeki, the system of interplanting rubber with coffee is still popular. In the years of high rubber prices the interplanted *robusta* was of secondary importance and generally the coffee trees were removed as soon as it was feared that they were in some way or other a hindrance to the rubber cultivation. Since the rubber prices have dropped the interplanted *robusta* have become an object of increased interest.

In the previous review (this *Bulletin*, 1932, No. 5, p. 183 T) SCHWEIZER called attention to the fact that, at least in some cases, it was profitable to keep the *robusta* trees during a great number of years. To obtain such a condition it will generally be necessary to sacrifice the rubber cultivation a little in favour

of the coffee trees either by pruning the *Hevea* trees or by adopting an avenue system, in which the rows of *Hevea* trees are planted at a great distance apart.

SCHWEIZER (14) gave figures, which proved that after the pruning of the rubber trees the interplanted *robusta* coffee may increase considerably in yield: in one case (the age of the field was not mentioned) the yield was raised from 1.56 *picul* per *bahu* in 1930 to 5.0 *picul* in 1931 and 8.0 *picul* in 1932. The decrease in production of the rubber trees was in the first two years about 29 % and 26 %.

SNOEP (15) investigated the result of two thinning-out systems on a plantation where the rubber was planted  $12' \times 24'$  with *robusta*  $6' \times 12'$ . In one field (A) two adjacent rows of rubber trees were removed out of every four rows; in another field (B) two rows were removed out of every three rows. In field (A) the new planting distance of the rubber was thus  $12' \times 24' \times 72'$ ; in field (B)  $12' \times 72'$ . The thinning out was done in 1924. The calculation of the average production over 7 years (1924-25 to 1931-32), showed that in field (A) 370 kg rubber and 620 kg coffee were obtained per year per hectare, and in field (B), 280 kg rubber and 654 kg coffee. These figures compare favourably with those of the yield in the control fields in which no rubber was thinned out and which showed productions of 410 kg rubber and 209 kg coffee per ha. The production of (A) and (B) may be considered very satisfactory also when compared with a combination of unmixed fields of coffee and unmixed fields of rubber.

VAN DER HOOP (16) investigated how experimental tapping of the trees for thinning out purposes could be simplified. He found that in order to get a reliable impression of the yield of a tree it is sufficient to register the yield four times a year with intervals of 3 months. The figures obtained in this way allow of an effective comparison of the yield of the different trees.

The slow growth of young seedlings or budgrafts planted in old rubber fields is probably mainly a consequence of lack of sunlight and partly also of root competition. d'ANGREMOND (17) suggested the possibility of eliminating the latter drawback by grafting the young tree on a root of an old tree. The idea was to obtain a coalescence of the young tree with the old one and to have for some time the former nursed by the latter. In the old root a hole was perpendicularly drilled and the young tree was pushed with its root into this hole and firmly pressed home. The union was found to have been perfect and the method seems simple, and apparently reliable, as all 19 stumps have united properly. But it is too soon to discuss the advantages or disadvantages of the method.

#### MANURING.

HAINES (18) gave a brief and clear report on manuring in Java and in Malaya in 1930. The publications reviewed by HAINES have been discussed partly in the present review, partly in the previous one (*Bull. Agric. Science and Practice*, 1932, Vol. 23, No. 5, p. 183 T).

VOLLEMA (19) published an extensive review of the manuring experiments carried out in West Java in the years 1914 to 1930 and especially in the period 1924 to 1930. The total of valuable experiments, carried out on scientific

lines, amounted to 58, viz, 4 in nurseries, 12 in young or backward plantations and 42 in tap gardens.

The 4 experiments in nurseries were arranged as plot or row experiments in which the height of the seedlings was measured. The following fertilizers were tested : sulphate of ammonia (2 experiments), urea (1 experiment), double superphosphate (2 experiments), ammophos 20/20 (1 experiment), diamphosphos (1 experiment) and nitrophoska (1 experiment).

The results may be summarised as follows : nitrogen manuring had positive effect in 2 cases (increase in height about 5%), no effect in 1 case; phosphate manuring had positive effect in 2 cases (increase in height about 5 %), in no case without effect; potash had never positive effect (3 cases); nitrogen + phosphate had positive effect in 3 cases (increase in height 5 to 10 %), and was never without effect.

In the experiments in young and backward plantations, partly with bud-grafts, partly with seedlings, different nitrogen, phosphate and potassium manures were applied. The nitrogen application had positive results in 2 cases, a doubtful result in 1 case and no result in 7 cases ; phosphate had positive results in 1 case, no effect in 5 cases ; for potash these figures were : 4 and 1, for nitrogen and phosphate 4 and 0, for nitrogen, phosphate and lime 1 and 0.

The experiments in tap gardens were carried out in plantations grown from ordinary seed. Different sorts of manure were tried : sulphate of ammonia in 25 experiments, double superphosphate in 12 experiments, and the other 13 manures in 24 experiments. Positive result was obtained with nitrogen in 11 cases (no effect in 9 cases), with phosphate in 2 cases (no effect in 10), with potash in 1 case (no effect in 9), with lime in 1 case (no effect in 3), with nitrogen + phosphate in 1 case (no effect in 1) : no effect was obtained with sulphate of potash + magnesium (1 case), (the experiments with dubious results are not included). Thus the best results were obtained with nitrogen, but in most cases the increase in yield was small and only in 4 cases out of the 20 a rather considerable increase in yield (15-25 %) was obtained, viz., on old laterite soil with a thin topsoil on Djasinga estate and on a rather decomposed and washed laterite soil near Tjidadak. As a rule 1 to 3 kg sulphate of ammonia per tree was given. It appeared, as was expected, that it is better to manure in the wet season than in the dry season.

The most important conclusions of these investigations may be formulated as follows. The manuring of nurseries, especially of those on poor soil, may be successful because only small doses of fertilizers are needed, and, as the manuring is not expensive, it may be profitable even under the present conditions of low rubber prices. Manuring young and backward plantations may cause such an improvement in growth that the manured trees can be tapped at a considerably earlier date than the unmanured ones and is therefore even under present conditions not seldom profitable, especially when the planting material is of superior quality. Manuring of tap gardens from ordinary seed gives any considerable increase in yield only on very few soil types, and even in these few cases is not profitable in present conditions ; in future plantations from selected planting material it may be different.

A case of successful manuring of a young and backward field in Malaya was recorded by WESTROP (20). The trees were planted in 1921-22 in a field where poor Chinese-planted rubber of unknown age had been cut out in 1920.

A mixture of nitrate of soda, sulphate of ammonia, castor cake, concentrated superphosphate and muriate of potash was applied. In January 1932 after 3 annual applications the average increase in girth per tree in the manured block was 10.33"; on the unmanured block 5.12"; a census of tappable trees, employing a standard of 24" in girth at 3' from the ground, gave the results that on the manured block 66.4 % of the trees were tappable and on the unmanured block 22.3 %. It is thus apparent that the fertiliser had marked effect.

A definitely significant increase in yield, by the application of a nitrogenous fertiliser (sulphate of ammonia) was obtained in a manurial experiment at Paradeniya (21). The experiment was started in 1930 on trees planted in July 1920 and thus 9 ½ years old at the start of the experiment. The rate of manuring was per tree: (a) 3 lbs. sulphate of ammonia, (b) 4 lbs. sulphate of ammonia, and (c) a complete mixture consisting of 2 lbs. sulphate of ammonia + 2.2 lbs. superphosphate + 8 lbs. muriate of potash. The first tapping was made in December 1929. Tapping was done on alternate days throughout the year on one cut over the half circumference. The summary of results obtained in the two years tapping (1930-32) shows that the single dose of nitrogenous manure (2 lbs. sulphate of ammonia) caused a mean difference of 160.6 gms. per tree. But a double dose of the fertiliser caused a decrease in yield in comparison with that obtained from a single dressing. The complete mixture gave a yield that is not significantly different from that of the yield obtained by a dressing of nitrogen alone.

A promising green manuring plant was described by VROLYK (22) — *Psophocarpus palustris*. This creeping and climbing leguminous plant, which has some resemblance to *Centrosema pubescens* and to *Pueraria phaseoloides*, is a still more vigorous grower. It has a rather long life but does not get woody. Especially in young fields in the full sunlight its growth is very luxuriant. In dense shade the growth is less satisfactory.

(To be continued).

Dr. C. J. J. VAN HALL.

## MISCELLANEOUS INFORMATION

### General Agronomy.

#### Meteorology.

EXPERIMENT IN FROST PROTECTION IN AN ORCHARD IN THE DEPARTMENT OF INDRE ET-LOIRE, FRANCE. — In *La Météorologie* (Nos. 92-93, 1932, pp. 483-487, 2 fig., 1 tabl., 6 diag.) M. J. P. GASSIES describes an experiment in frost protection which was carried out on the night of 22-23 April in the orchard of the "Direction des Services Agricoles" of Indre-et-Loire at Saint-Symphorien-les-Tours.

In favourable meteorological conditions (sky with very little cloud, slight wind) a process was tested consisting in supplying heat to the lowest layers of the atmosphere

so as to replace the losses by radiation and conduction. To this end from 4 to 6 a.m. 52 petrol stoves with a height of 65 cm. were lighted over an area of about 0.5 hectare.

By means of sling thermometers the writer determined the temperature of the air at various heights above the ground (10 cm—50 cm—1 m—1.5 m—2 m—3 m) every quarter of an hour, both in the heated plot and in another part of the orchard with a similar exposure but situated 130 metres from the nearest stoves and away from any influence from the heated region.

This single experiment clearly cannot allow of a definite conclusion, but it showed that the supply of heat to the lower layers of air prevented the formation of frost in the experimental plot. In fact at every height at which the temperature was measured after the lighting of the stoves it rose in the heated area, whereas it continued to fall in the other part. Thus, for example, at 10 cm above the ground in the heated part the temperature never fell below 0°, the value which it had before the stoves were lighted, while in the part which was not heated it fell later to a minimum of — 2.4°.

It is also worth noting that the heating effect was more noticeable near the ground (at 10 and 50 cm) than in the higher strata of the air. At 10 cm, for instance, the difference in the extreme temperatures of the plots compared reached 4.5°, at 50 cm only 2.7°, while at 1 to 3 metres above the ground the difference was less than 2° and remained at an average of about 1°.

White frost was observed in places not protected by the heat and only dew in the part of the orchard containing the stoves

T. B.

### Soil Science.

INFLUENCE OF LIME AND ORGANIC MATTER ON THE RESULTS OF ANALYSIS BY THE METHOD OF *ASPERGILLUS NIGER*. — As is well known, Prof. NIKLAS (Weihenstephan) and his collaborators have found that the hyphomycetous fungus *Aspergillus niger* develops to an extent which is more or less proportional to the quantities of potash and phosphoric acid contained in the culture medium. By growing this fungus on different soils and determining the weight of mycelium obtained on each, one can, according to these writers, estimate with a certain degree of accuracy the respective contents in available  $K_2O$  and  $P_2O_5$  of the soils used.

Numerous tests of this method made by the writers themselves and by various agricultural institutions have shown that it often gives very satisfactory results, comparable with those of the NEUBAUER method (analysis of rye seedlings) and even with those of fertiliser tests in the field.

It must however be recognised that  $K_2O$  and  $P_2O_5$  are not the only elements of the soil which may influence the development of *Aspergillus*. The latter is dependent also to some extent on the soil content in lime and organic matter, which are important and more or less abundant elements in the soil, and it may happen that one or the other or even both of these together may have an influence on the growth of the fungus at least equal to that of  $K_2O$  and  $P_2O_5$ , which may introduce error in the supposed content in these elements.

*Lime.* — Prof. NIKLAS and his coworkers themselves recognise that lime, either in the form of salts (carbonate, citrate, etc.) applied to cultures of *Aspergillus*, or as a soil constituent, influences the results of their method by favouring too much the growth of the fungus. It results that in the case of calcareous soils there is a risk of attributing to potash an action due in reality to the lime, and so of obtaining a false idea of the content in available  $K_2O$  of such soils.

They therefore conclude that the application of their method to calcareous soils necessitates great caution in the interpretation of the results.

*Organic matter.* — MM. L. KIESSLING and A. SCHMIDT (Munich) have found that the growth of *Aspergillus niger* is definitely affected by various organic substances, both of plant origin and those entering into the composition of the soil.

Thus, in an *Aspergillus* culture in a complete nutritive solution (but without soil) the addition of nearly pure cellulose (paper) and other organic materials extremely poor in potash (washed sphagnum peat, deal shavings, etc.) may definitely increase the weight of mycelium obtained. These organic substances contain so little potash, however, that it cannot contribute to the observed increase in mycelium, which is mainly the result of the influence of the organic materials themselves.

An increase in mycelium is produced also when these substances are added to various soils of which the content in available  $K_2O$  is to be determined.

Humus-rich and peat soils greatly favour the growth of *Aspergillus*, which tends to give a false interpretation of the results as regards the content in available  $K_2O$  and  $P_2O_5$ .

Prof. NIKLAS and his collaborators recognise that their method is not applicable to humus-rich and peat soils, but they point out that these soils sometimes contain considerable quantities of lime, which may contribute to a marked extent to the development of *Aspergillus*. In such cases the organic matter of the soil is not alone responsible.

(1) H. NIKLAS, G. VITSMÖJER & H. POSCHENRIEDER, Der Einfluss des Kalkgehaltes auf das *Aspergillus* - Wachstum bei der Prüfung des Kalidüngebedürfnisses der Böden, in *Zeitschrift für Pflanzenernährung, Düngung und Bodenkunde*, Teil A, Berlin 1932, Bd. 24, Heft 3-4, p. 107-178) -- 2) L. E. KIESSLING & A. SCHMIDT, Die Beeinflussung des Wachstums von *Aspergillus niger* durch organische Substanzen, *Archiv für Pflanzenbau*, Berlin 1932, Bd. 9, Heft 2, p. 293-305 -- 3) H. NIKLAS, H. POSCHENRIEDER & J. TRISCHLER, Urteile und Erfahrungen über die Verwendbarkeit der *Aspergillus* - Kalimethode, etc. *Zeitschrift für Pflanzenernährung*, etc., Teil B Berlin 1933, 12. Jahrg., Heft. 3, p. 109-130).

#### Fertilisers and Fertilising.

ITINERANT LIME CRUSHERS IN THE DEPARTMENT OF THE OISE AND ITS VICINITY, FRANCE. — In the *Journal d'Agriculture pratique* (1932, No 34, pp 151-153) M. BARBUT gives interesting information about this original and practical machine that he has helped to introduce.

A number of studies and experiments (which have been reported in previous numbers of this *Bulletin*) have demonstrated the good effects of certain ground limestones for improving soil texture, and their rapid action, which is better than that of marls in blocks and in many cases equal to that of slaked lime.

As a result of these experiments a number of lime crushers have been installed, some by individual farmers, others by cooperative societies, others by industrial or commercial groups, for the utilisation of stone quarry waste.

All these lime crushers are stationary. They give good economical results when they can find sufficient sales within a maximum radius of 7 to 8 kilometres. Failing this the crushed limestone is so costly to transport that its price becomes prohibitive, which explains many failures of stationary installations.

If, on the other hand, the lime crushing can be effected by moveable machines, travelling from quarry to quarry to prepare the required lime, if not on each farm at least in each commune, the chances of success are considerably increased and the large tonnage produced results in very low costs of production.

This consideration led the writer, the Director of the Agricultural Services of the Oise, to collaborate in the formation in this Department of a Syndicate for the exploita-

tion of a travelling lime crusher. The Syndicate has its headquarters at Romescamps, in the north-west of the Department; its radius of activity extends over three Departments (Oise, Somme, Seine-Inferieure); and it has forty members, the most distant of whom are about 40 kilometres from the centre of activities.

A great technical difficulty had first to be solved, as there was, and still is, no moveable crusher on the market. The difficulty was surmounted by a farmer, M. LOSSEAU, formerly an engineer, who invented and built the necessary mechanism and thus assured the success of the cooperative society. This mechanism consists of:

(1) A heavy oil engine of 20-22 h. p. (bought second-hand) mounted on a solid chassis. It works too near to its maximum power and for the type of crusher adopted it would be better to use an engine of at least 25-30 h.p.

(2) The crusher, mounted on the frame of an old thrasher and consisting of (a) a hopper, (b) a preliminary crusher, producing pieces the size of a fist, (c) the crusher proper, and (d) an inclined conveyor band, receiving the crushed lime and carrying it some metres from the machine or if required into the transporting vehicle.

Thanks to much ingenuity in the construction and the partial use of secondhand material the whole mechanism cost only a little over 40 000 francs. It has been in use for over a year and gives satisfaction. It may obviously be modified, but it represents a rational solution of the problem of itinerant lime crushing.

As regards the raw material used, within the radius of the activity of the Syndicate it is entirely chalk, differing from one quarry to another only in the moisture content, which may vary from 10 to 25 %. The crushing is more successful the lower is the moisture content; it is possible to a content of 16-18 % but bad beyond that, the moist chalk tending to form a doughy mass adhering to the hammer and screen of the crusher. In certain cases it is necessary to dry the chalk to some extent before crushing.

The above mechanism allows of crushing 4 to 5 tons per hour with adequate labour, but taking into account all the unexpected circumstances it is better to count on an average output of 2 tons per hour, corresponding to 1000 hours of work per annum and an annual production of 2000 tons, which is easily marketed in the Syndicate's zone of activity.

All the expenses being taken into account the cost of a ton of crushed chalk would not exceed the advantageous figure of 30 francs, even in the most unfavourable circumstances.

T. B.

### Ecology.

INFLUENCES OF CLIMATE ON THE YIELD OF POTATOES IN THE DEPARTMENTS OF THE LOWER LOIRE AND FINISTERE, FRANCE — M. J. SANSON of the National Meteorological Office has made on this subject very interesting observations in the lower Loire; the principal conclusions are given below.—

*Lower Loire:* (1) temperature does not appear to have a dominating influence on potato yields.

(2) On the other hand the amount of rainfall from May to September seems to play an important part in this connection. In fact the crop may be considered as good if the rainfall from May to July has been sufficiently abundant (180 to 220 mm.). If on the other hand these three months are dry (less than 180 mm. of rain) it is necessary to compensate for the fatal effects of the drought that the rainfall from August to September should exceed the normal, that is 70 or even 110 mm., according to the case.

On the other hand if the period May to July is rainy (over 220 mm. of rain) it is necessary in order to counteract the bad effect of the excessive humidity, particularly the losses caused by fungus diseases, that the rainfall from August to September should not reach the normal of 70 mm.



*Finistère.* — M. VINCENT, Director of the Agronomic Station of Finistère, has made the following observations :—

Good yields are not dependent on the quantities of heat received but on the quantities of rain fallen. In the years of good and heavy yields the rainfall from May to August inclusive corresponds to a minimum of 270 mm. ; in the years of low yields it corresponds to a minimum of 220 mm.

Two successive dry months definitely compromises the crop whatever may be the rainfall later.

When the varieties grown are late maturing the September rainfall has as important an influence as that of the preceding months and it becomes necessary to compare the total rainfall from May to September inclusive.

To produce heavy yields in Finistère therefore the potatoes require moderate weather with regular and sufficient rainfall during summer.

The writer considers it desirable that studies of this nature should be repeated at numerous localities in the Department but grouping them by: (1) natural regions characterised by differences of soil, the Department representing only a fictitious division of the territory ; (2) varieties grown, for it not possible to consider in a general fashion the potato, the wheat, the various varieties reacting differently to meteorological influences.

(J. SANSON. *Journal d'Agriculture Pratique*, Paris 1932, No. 1; p. 12-13).

T. B.

### Crops of Temperate Regions.

DIFFERENT TYPES OF SEED OF THE GENUS *PLANTAGO*. --- In the *Annales agronomiques* for January and February 1933, M. LOUIS FRANÇOIS draws attention to the agricultural importance of various species of the Plantain genus (*Plantago*). He first defines the term *psyllum*, which is applied in commerce to three species of plantain :— *Plantago psyllum* L., *Plantago arenaria* Wadst. and Kit., and *Plantago lanceolata* L. He describes the precise geographical area over which extend the various plantains, the seeds of which in southern France and especially in the Departments of Vaucluse and Bouches-du-Rhône are the object of extensive cultivation. The characteristics of the seeds of the genus are clearly set forth and a key given for identification of the species. There are drawings of the seeds and a bibliography.

G. R.

PHYSIOLOGICAL SELECTION OF SEEDS BY WOOD RAYS. — By submitting rice of the variety " Bertone " to radiation from a GALLOIS lamp (wave length between  $\lambda = 3820$  and  $\lambda = 3341$ ) L. BORASIO observed a considerable difference between the fluorescence emanating from sound seeds and that from " dead " and unhealthy seeds or seeds with a less good germinating capacity.

The facts were confirmed by the subsequent cultivation of the separate seeds and the different yields of grain obtained.

These results show that WOOD light may usefully be used for selection of rice seed and may possibly be extended to other cereals.

(*Il Giornale di Riscoltura*, Vercelli, 1932, No. 11).

G. S.

EFFECTS OF SEED TREATMENT ON THE GERMINATION AND CROPPING OF SUGAR BEET (*The Journal of Agricultural Science*, F. H. GARNERS and H. G. SANDERS ; July 1932, p. 551-559). — The seed clusters of sugar beet do not germinate in a satisfactory manner, mainly because the seed is wrapped in a resistant sheath. Experiments

have been carried out at Cambridge to determine whether treatments of the seed which result in a removal of a part of the sheath are commercially practicable, more particularly when carried out at the time of sowing. Treatment with concentrated sulphuric acid, which can be effected only by the seed dealer, is effective, as it accelerates and increases germination, giving a denser crop, which usually means also a higher yield. A gain in yield of as much as 2 tons of unwashed beet per acre has been obtained by this means. The clusters may also be passed through a mill; this process is more economical and experiments show that it is nearly as effective as treatment with sulphuric acid.

D. K.

DISTRIBUTION OF RESERVE MATERIALS IN WINTER WHEAT (*The Journal of Agricultural Science*, R. C. MALHOTRA, July 1932, p. 485-95). — Winter wheat was grown in normal conditions from September 1930 to June 1931 inclusive. Every 15 days the following factors were determined—ash, fat (ether extract), water, sugar, starch, hemicellulose, total nitrogen, growth of the plants. Two analyses of the grain were also made during the course of development.

The results obtained from the plants seem to indicate that there is less moisture at the beginning of growth (in winter) and at the time of maturity. Oils are found in greatest quantity at the moment of maturity; the ash content is very high to begin with, then decreases later.

The content in sugar is very low at the beginning, increases later, then again diminishes. All the starch seems to be utilised during the last period of growth and stored during the development of the grain or else transformed into other constituents of the plant. The total nitrogen, which is low at first, increases towards the last periods of growth. Very little difference from a chemical point of view is found between the grain analysed on 31 May and that studied on 15 June

D. K.

A NEW GREY-GRAINED OAT VARIETY: THE "GRIGNONNAISE". (*Comptes rendus hebdomadaires des Séances de l'Académie d'Agriculture de France*, M. CREPIN, 25 January 1933). — The old *Grise de Houdan* oat has the serious defect of having a too weak straw. On the other hand the (*Ligowo* × *Brie*) 176 of Prof. SCHIRBAUX has a straw showing great rigidity, but has a coarse grain. In 1922 the writer succeeded in crossing the *Houdan* × (*Ligowo* × *Brie*) 176 at Grignon so as to obtain a variety which should combine fineness of grain with rigidity of straw. Among the seedling strains produced which fulfilled these requirements the writer retained one which has now been put on the market under the name of "*Grignonnaise*". This has a grain comparable with that of the *Houdan*, slightly larger, and a straw which makes it suitable for cultivation on medium or rich soils. The proportion of kernel in the grain is very high: 72 to 75 %, its yield exceeds that of the *Houdan* by about one quarter, and is comparable with that of the yellow *von Lochow*, but has a greater resistance to lodging than the latter. The "*Grignonnaise*" thus represents a considerable improvement in coloured oats.

D. K.

BUDDING CITRUS TREES IN VICTORIA, AUSTRALIA (*The Journal of the Department of Agriculture, Victoria, Australia*, J. L. PROVAN, February, 1933). — On the subject of budding there are perhaps more theories than on any other single operation in citrus cultivation. While some of these ideas are relatively unimportant and largely a matter of individual preference, others are technically unsound and should not be considered.

In recent years there has been a growing interest in re-working old and unprofitable trees to more profitable varieties, and a very earnest endeavour on the part of

the citrus grower to improve the quality of his production by the careful selection of buds from the best trees.

The trees which are to be ready for budding in the autumn are belheaded severely in the preceding spring. This means that about three-quarters of the top is removed as far back as the main branching system. The result of such severe pruning forces into growth many latent buds and these grow during spring and summer and produce strong vertical growths in which to insert buds.

*Time of budding.* — Budding of citrus can be successfully accomplished only when the sap in the buds and the stock is moving freely. It is useless to attempt budding when the trees are not in this condition. Usually the best months for budding in Victoria are November and March. The presence of 6 to 7 inches of new growth on the tree and the fact that the bark easily separates from the wood, serve as good indications of the free movement of the sap and the presence of new growth in the cambial region. When budding a clear, warm day should be chosen and excessively hot and windy weather avoided. The spring buds (November) will begin growing in early December, but budding done in the autumn remains dormant during the winter and begins growth the following spring. Autumn budding is preferable as it has the additional advantage that failures can be re-budded in the spring without loss of time.

*Choosing the buds.* — Trees which are to supply buds should be healthy, vigorous, and consistently produce heavy crops of good quality fruit of the desired variety. Any trees which show signs of pronounced variation in quality of the fruit should not be chosen as parent trees. Having decided upon the particular trees, the next step is to select suitable bud-wood, that is, the short twigs carrying the buds. Bud-wood should be chosen from well rounded, mature wood about the thickness of a pencil and not more than one year old. Young and immature wood of orange and lemon trees is angular and of a light-green colour, but as maturity is approaching it becomes rounded and dark green. When nearly mature, the bark becomes somewhat rough and streaked with irregular grey patches, and finally turns a greyish-brown. When the wood has attained the dark-green colour and has become well rounded, it is suitable for the supply of buds. When the bud-wood is taken from the tree it is usually cut into suitable lengths for handling — 8 to 10 inches long — and the leaves are removed by cutting through the middle of the petiole. A short piece of stalk then remains attached near the bud, this being very helpful in its subsequent handling. If the budwood is not required immediately, it should be packed in damp sphagnum moss or damp newspaper and placed in a cool spot. All care should be taken to avoid any drying which will lessen the vitality of the buds.

*The budding operation.* — Any leaves and thorns near the base of the shoot which is to serve as the stock should be removed, so that they will not interfere with the operation. Then the side of the shoot which is rounded and is sheltered from the afternoon sun is chosen, and near the base an incision is made with the point of the budding knife in the bark, slightly more than an inch long and deep enough to cut the bark. The knife is then turned at right angles to this cut and another cut made across either the top or bottom of this incision. The inverted T cut is to be preferred when there is a risk of heavy rain following upon the budding operation. The knife blade is then inserted in the vertical cut near the junction of the two cuts and the flaps of bark are separated carefully from the wood by raising gently. The stock is now ready to receive the bud.

*Cutting the bud.* — Buds should be taken that are plump, and vigorous; if the small, almost dormant looking buds are used, difficulty is often experienced in forcing the buds into growth even after they have successfully healed to the wood of the stock.

On this account buds near the base of a shoot should be discarded. The next step is to remove the bud together with a shield-shaped piece of bark. The cut is made as shallow as possible, but usually a piece of wood also is cut from the bud-stick which may be removed if preferred. Holding the bud by the small piece of leaf stalk, it is carefully pushed up into position beneath the two flaps of bark on the stock, and these two flaps then close over it. The next operation is to tie the flaps into place and exclude as much air as possible from the bud. For this purpose natural raffia or prepared waxed tape can be used. Substances of an oily nature should not be employed. In 10 to 12 days' time the buds can be examined and if still green they have been successful. If the eye of the bud has become a brownish colour the bud will not grow. Three weeks after budding the binding can be removed.

To "force" the buds into growth a deep notch may be cut about 2 inches above the bud so as to divert a strong flow of sap to the bud.

D. K.

**IRON CONTENT OF FRUITS AND VEGETABLES.** — The Department of Agriculture of the United States has recently published a bulletin dealing with the content in iron of fruits and vegetables. Analyses were made of 237 samples belonging to a hundred different species of fruits and vegetables, and the results allow of their being classified in 4 classes according to their iron content. Class 1 Those containing less than 0.4 per thousand of iron (considered as relatively poor in iron); Class 2, those containing from 0.4 to 0.79 per thousand (considered as relatively rich in iron); Class 3, those containing from 0.8 to 1.59 per thousand (considered as rich in iron); Class 4, those containing 1.6 per thousand and over (considered as very rich in iron).

The class poor in iron is constituted almost entirely of fruits. Potatoes fall in the iron-rich class; ripe leguminous seeds and the green tips of various vegetables come in the 4th class.

This classification shows that the iron content of fruits and vegetables is closely correlated with their richness in chlorophyll, and with the hydrogen ion concentration of the sap.

(Dr. Guido ROSSATI, *Nuovi Annali dell'Agricoltura*, Roma, 1932, Anno XII, n. 2-3).

J. I.

**COTTON GROWING EXPERIMENTS IN RUMANIA.** — The Farmers' Association of Banat is beginning this year some experiments in growing cotton on a vast scale. An early-maturing variety is being used which has already given good results in other parts of Rumania (Oltenia, Muntenia, Dobroudja).

(*Banater Landwirt*, Timisoara, 1933, Nr. 14).

E. M.

## Tropical and Subtropical Crops.

**CULTIVATION OF SUGAR CANE IN MADEIRA.** — Sugar cane was introduced into this island in 1425; the first seed came from Sicily. The first cane cultivated was *Saccharum officinarum genuinum* Hack.; it was followed by the Bourbon cane imported from Cayenne. The variety most grown nowadays is the "Uba" cane which was imported from Natal in 1827. This cane finds the climatic conditions in Madeira favourable for its growth. The best conditions however are on the coast in the low lying zone of the island. It grows well up to an altitude of 300 metres. It is sometimes grown up to 500 metres in the south; in the north it grows only up to 150 or 200 metres. Owing to the broken character of the land and the division of

property, sugar cane is grown only as a horticultural crop; the fields or "cerrados" often have an area of less than half an are. Cultivation is entirely by hand with the hoe; the plough is rarely used. The crowns are planted early in April. The plantations are watered every fifteen days. Cropping begins at the end of the second year. The cane leaves are used during the year and particularly at the time of harvest for feeding dairy stock and for litter. Cutting is effected with the "podao", a kind of chopping implement. The stems have an average height of 1.7 m; they are small (1 to 2 cm in diameter) and greenish white. The percentage of fibre is high, reaching 17 %. The Uba cane is less rich in sugar than the varieties grown formerly in the island; it contains on an average 13 % of saccharose. The best juices are extracted from the canes grown in the low lying lands in the south, and come from plantations well watered during the hot season and well fertilised. The following table shows the average percentage of saccharose and glucose in the sugar cane of Madeira.

General average		Average in east of island		Average in north of island	
Saccharose	Glucose	Saccharose	Glucose	Saccharose	Glucose
12.6 %	0.7 %	12.8 %	0.69 %	11.1 %	0.74 %

The cane plantations generally last for ten to fifteen years. Their acreage has varied since 1905 from 1000 to 1500 hectares, or from 3.5 to 5.5 % of the cultivated area of the island.

(José CUNHA DA SILVEIRA *Anais do Instituto Superior de Agronomia*, Lisbon, vol III).

J. I.

THE OIL PALM IN ANGOLA. — The oil palm is irregularly distributed in the three orographic, phytogeographic and climatic zones of Angola. In the first, or littoral, zone it is met with on the alluvial soils, generally silico-humus or silico-clay-humus, which are moist and sometimes constantly flooded by a sheet of running water, but it is never found on marsh soils. The palm groves of the second or mountain zone are less dense and less extensive than those of the preceding zones, not because the soil and climate are not suitable but because the forests of this zone are so dense that the propagation and growth of the oil palm are obstructed. In the zone of the plateaux the oil palm is rare and is found wild only in the regions situated to the north of the river Quanja and at heights below 1200 metres; in these regions the development of the oil palm is slower; for there is insufficient heat for normal growth, excepting on the plateau of the Congo district.

Nearly all the known varieties of oil palm have already been found in Angola. The varieties *semper nigra* and *communis*, form *dura*, predominate.

The number of palms to the hectare, the area of the plantations and the weight of the bunches vary considerably in different regions of the country, as is shown in the following table:

Situation of palm plantations	Number of palms per hectare	Mean weight of bunches in kg.	Percentage of fruits in the bunches
Valleys of the Inhuca and the Iquali	75 to 100	15.60	—
Valley of the Lucola . . . . .	30 to 60	16.40	54.63 %
Left bank of the Zaire . . . . .	5 to 150	16.36	64.35 "
Valley of the Louga . . . . .	—	17.30	59.07 "
Valley of the Nhia . . . . .	—	20.20	50.40 "

As in all the other African colonies the greater part of the oil and the kernels exported come from the exploitation of natural palm groves by the natives. At the present time however there are already many planters and various companies which are taking up palm cultivation. (Companhia de Cobinda, Société Quissama Agricola L. da, Empreza Agricola do Uhia, Companhia do Amboin, Companhia do Seles, etc.).

These companies have brought into cultivation the natural palm groves and have formed systematic plantations with palms from natural groves or from nursery plantations.

The oil is extracted by the wet and dry methods. A new company, the « Fomento Geral de Angola », is about to carry out selection work hoping to obtain fruits with a thin shell and a pulp rich in oil.

(C. DE MELLO GERALDES, *Anais do Instituto Superior de Agronomia*. Lisbon, vol. III).

J. I.

IPPECACUANHA (*Boletín de Agricultura*, Bogota, October – December 1932). — There are two species of ippecacuanha belonging to the family of the Rubiaceae: *Caphaëlis Ipecacuanha* and *C. acuminata*. *C. Ipecacuanha* is produced mainly in the southern part of the province of Mato Grosso in Brazil, where it is known under the commercial names of Rio de Janeiro ippecacuanha, Brazil ippecacuanha or Para ippecacuanha. *C. acuminata*, is grown principally in the Department of Bolivar in Colombia, where it has the commercial name of Cartagena ippecacuanha. It grows wild in Venezuela; it is found also in the coastal region of Guatemala and in Panama. The plant grows in very moist but not flooded regions, in humus-rich soils with a clay sub-soil in the vicinity of rivers. It requires somewhat equable day and night temperatures and cannot withstand too much insolation. The ippecacuanha is a herbaceous climbing plant, growing slowly; it flowers in January to February, the fruits are ripe in May. The roots remain active during the whole year and may be dug at any season; it is the custom however to suspend cropping during the seasons of heavy rainfall. The roots are dug in a simple fashion: all the stems are taken in one hand a stake driven deeply into the soil and the plant lifted; in this manner sufficient pieces of roots are left in the ground to give rise to a new plant. The roots are shaken to remove the soil and put in a bag; they are dried in the sun for three or four days, protecting them at night from dew; when they are dry they are cut into small pieces. As the plant grows only in certain tropical conditions it is very difficult to cultivate. Frequent attempts have been made to introduce it into the British Colonies but without much success, except in the Straits Settlements. One of the principal difficulties is its slowness of growth; further, it gives a reasonable yield of roots only at the first crop, the second being practically a failure. Ipecacuanha is in great demand in a number of countries and the producer is always sure of a good price.

D. K.

SANDALWOODS AND PSEUDO-SANDALWOODS. (*La Parfumerie Moderne*, February, 1933. A. ROLET). — Sandalwood has been known since remote times. Ancient Chinese and Sanscrit books mention sandalwood; it is one of the chief articles of trade of India. The first illustration of a tree was published by RUMPF in 1741. The most valued varieties for the wood essence is the white sandal or the pale oil sandal, the oil sandal of India, of Bombay, of Malabar and of Timor. Sandalwood belongs to the family of the Santalaceae; it is a fine tree somewhat similar to the walnut; it may reach about 10 metres, has a rounded head, is thick growing with opposite branches; the leaves are opposite, 4 to 6 cm in length, entire, acuminate at both ends, glabrous; the flowers are

scentless, small, yellow or deep purple ; the fruit is a globular drupe of the size of a cherry, black when ripe.

Sandalwood flowers from February to April and the fruits ripen from May to June. The trunk of the tree has a brownish bark, a sapwood white, thick and soft; the perfect wood is very close-grained, is heavier than water, oily in appearance, lemon yellow, with concentric brown zones ; the heart-wood is scentless when fresh, but when dry has a very strong aromatic odour, recalling the rose, the iris and the musk ; it contains an essential oil (3 to 7%), sandalwood essence, which is extracted by distillation.

Certain botanists consider the sandalwoods (white sandalwood in particular) as chlorophyll-containing parasites, their suckers (*haustoria*) fixing themselves to the roots of neighbouring plants ; it is, in fact, in hedges and very dense forests that the tree grows most readily. In certain cases however parasitism is only temporary, during the early stages of growth. In Europe the white sandalwood is sometimes cultivated under glass, in soil rich in humus, but it never acquires as fine a growth as when its roots can find a host. The white sandalwood grows particularly in the East Indies and Malaya ; it requires a warm and moderately rainy climate ; it is found on light soils mixed with gravel or in a heavier soil of red clay ; in rich soils sandalwood develops vigorously but its wood is then less scented. Propagation is facilitated by the dispersion of its seeds by certain fruit eating birds. A plantation of sandalwood can be formed, but the trees obtained thus seem to grow less well than those produced by natural reproduction.

*Utilisation of the timber.* — In perfumery it is used in the dry and pulverised state in the preparation of sandalwood, rose, etc. sachets and in the preparation of incense powder. In medicine sandalwood is used as one of the four sudorific woods ; the Hindous attribute to the powder sedative properties. The wood has an agreeable odour, and does not decay ; it is used for carving, in cabinet making, fine joinery and for the manufacture of small luxury articles. The sandalwood essence is obtained by distillation. In India the principal centres are Kanaujet and Bangalore, where there are some modern installations ; the production of the essence is a monopoly of the Government of Mysore.

D. K.

## Agricultural Engineering.

REDUCTION OF FORCE OF TRACTION IN TILLAGE BY MEANS OF ELECTRICITY. — Basing his work on the results of experiments carried out to reduce the power required to draw ploughs by influencing soil structure by means of electricity, M. Fr. WEBER (Germany) has also carried out a series of similar experiments with an ordinary mould-board. He found that to give the best results the coulter must be as large as possible. The mouldboard was connected to the positive pole and the coulter to the negative pole of the source of the current.

On not too heavy clay soils, which are best suited to these experiments, M. WEBER obtained with a continuous current of 110 volts and 1 ampère, a power reduction of about 20 %.

Change of speed of work of between 0.64 and 1.5 metres per second had no effect on the reduction of power necessary for traction of the plough.

By using a tractor for the plough a small generator of continuous current can be used which will supply the electricity required to affect the soil.

(Fr. WEBER, Inaugural Address, Technische Hochschule, Munich, 1932).

TWELFTH AGRICULTURAL MACHINERY SHOW, PARIS, JANUARY 1933. — The Show took place from 24 to 29 January in the Exhibition Park of Paris. There were 605 stands which covered an area of about 12 acres. This great Show each year is

characterised by groups of machinery which indicate the most recent tendencies in the field of agricultural engineering.

At the Show this year could be observed a pronounced tendency to the increased use of the Diesel engine and of pneumatic tyres, both for tractors and for ordinary farm transport, which seems to indicate the beginning of a somewhat far-reaching transformation in means of transport from an agricultural point of view.

In regard to internal combustion engines of medium power, France maintains a position in the front rank among other countries with her engines of the "Bernard" type of about 8 h.p. These engines, of which about 36 000 have been built by Messrs. Bernard of Suresnes (Seine), have a vertical cylinder to ensure a more uniform running and syphon refrigeration formed of copper tubes, through which the fly-wheel of the engine draws cooling air. Very good results have been obtained with this system.

Next to the internal combustion engines in the Show was a large display of electric engines, which have been very thoroughly studied in France for agricultural purposes. From the small engine to the large windlass for electric ploughing there was noticeable a great development of the application of electricity to agriculture, supported by the large electric companies.

Among the tractors the heavy tractors were as usual well represented and gaining considerable ground. The systems of tracklaying traction are at the head of the movement; they are in general more costly on account of the difficulty in making the caterpillar wheels and of certain of the organs of transmission, but they represent great advantages as regards adhesion and economy in consumption. Tracklaying wheels appear particularly suitable for slow-moving heavy oil engines.

Among the tractors with 4 driving wheels we record those of the IATIL factories, the wheels of which are fitted with pneumatic tyres allowing of running on the road and, thanks to the articulated biters on their main rims, can in a few minutes be made ready for running on the field.

Transport by tractor cannot however be regarded as a normal procedure with machines with rigid metal tyre rims. Tractors having neither springs nor elastic tyres any hard ground is fatal to them. For this reason it is now proposed to provide farm tractors with pneumatic tyres of large section. It is hoped to obtain with very large, low pressure, tyres a considerable grip on the soil without the wheels sinking in. One would thus have the ideal machine allowing of passing from road to field and field to road without loss of time.

Small and medium-sized tractors are occupying an increasing amount of space at the Show, as small and medium farms are very numerous in France. Among the new types shown was a small, extremely elongated and very narrow tractor, evidently intended for use in the vineyard. Its engine has three forward speeds and one reverse and has also an inverter making it possible to work in both directions with each of the gears. A power take-off gives direct drive of, for example, the cutter-bar of a mower, so that the movement of the cutter may be independent of the running speed. This tractor may also work as a windlass.

There was also a small tractor working either as tractor or as windlass of which the engine is only 2.5 h. p. This might be considered somewhat low power, but it has been recognised as a result of a number of experiments in 1932 as entirely sufficient for most horticultural purposes, and even for working a mower with a 70 cm cutter-bar.

The machines for soil preparation and those for manure spreading and seeding present no novel features. Among the machines for cultivation of crops the MAGNIER-BEDU factories of Groslay (Seine-et-Oise) show a device for rapidly transforming an ordinary cultivator into a hoe for cereals.



Among the harvesting machinery the S. T. E. P. A. Co. of Paris exhibit a small device for exerting pressure on the blades of mowers. This device is placed between the two halves of the connecting rod of the mower and is intended to force the parts to press continuously on the ledger plates to avoid a defective working of the mower in case of tough plants or mole-hills or other obstruction.

Messrs. AMOUREUX of Toulouse have invented a special transmission of drive for binders working with a tractor. Usually the connexion between the power take-off of the tractor is by means of a cardan shaft. AMOUREUX has replaced it with a flexible shaft which lends itself better to the great deviations between the tractor and the binder. Further, as the mechanism of the binder should not be submitted to unnecessary strain when, for example, the blade is obstructed by an unyielding substance, this transmission has been fitted with a safety device, namely an automatic disengager in case of blocking.

The harvester-threshers and windrowers with pick-up attachment were of several types: one had a cutting width of over 5 metres, two others had a cutter bar reduced to 1.5 and 2 metres respectively, but their price even so was too high.

These machines are costly, but the few tests that have been undertaken up to the present show that their use may result in an economy of 40 to 50 % on the total costs of harvesting and threshing, both on large farms, which are rare in France though relatively common in North Africa, and on medium-sized farms which are able to procure the machines by cooperation or other means. But the use of the machines raises at the same time serious problems. For instance, the great influx of wheat so soon after harvest necessitates the use of silos for storage, and drying being often incomplete means that artificial grain driers must be used; thus the use of the machines will develop with difficulty.

One rather promising solution of the problem was brought forward some years ago by a French engineer, M. DOUILHET, in the form of a simple combine harvester suited to the conditions of French agriculture (1), but it seems that its promises have not been followed up.

To avoid the scattering of the straw behind the combine, the firm of RIVIERE-CASALIS of Orleans has developed a straw-trusser intended to be attached to the combine and to discharge the trusses on the field.

For the cleaning of the grain Messrs. MOLLINGER-BROSSIER of Chabris have constructed a new type of sorter of a rather original design. It is composed essentially of rolling rubber matting on to which the grain falls from the sieves in which it has received a preliminary rough grading. A final selection is made through wooden cylinders fitted with metal discs.

During the Show was also held (from 23 to 27 January) the International Congress of Agricultural Machinery, at which the following questions were discussed by agriculturists and the Professors of the chief Agricultural Schools of France: M. G. COUPAN, Professor at the National Agricultural School of Grignon — (1) Tractors and farm transport; (2) Colonial equipment — M. J. M. VINCENS, Director of work at the School of Grignon — Equipment for tillage and after-treatment of crops — M. J. BOURDELLE, Director of work at the Institute of Agronomy — Pulverisers, and watering and irrigation equipment — M. T. BALLU, Professor at the Institute of Agronomy — Harvesting machinery — M. ABADIE, Professor at the School of Rennes — Tools and equipment for the treatment of farm crops — M. DAUTHY, Professor at the School of Rennes — Dairy and cider-making equipment — M. BLANC, Professor at the School of Montpellier — Viticultural equipment —

(1) See *International Review of Agriculture*, 1928, No. 9, pp. 811-814.

M. R. DUBOIS, Agricultural Engineer at Montpellier — The adaptation of electric engines to farm requirements — M. G. PASSELEGUE, Agronomist — The development of internal-combustion engines in agriculture — M. J. CIRCAUD, Comparative prices of farm products and equipment from 1914 to 1932.

The General Assembly of the International Commission of Agricultural Engineering, which was founded on the occasion of the Liège Show in 1930, also took place during the Show.

(COUPAN G., *Le XII<sup>ème</sup> Salon de la Machine agricole*, Paris 24-29 janvier 1933, *Le Génie Civil*, Paris 1933, tome CII, nos 10, 11 et 12, p. 228-231, 252-256, 273-276, 25 fig. — COUPAN G., *Les machines nouvelles au XII<sup>ème</sup> Salon de la Machine agricole*, *Journal d'Agriculture pratique*, Paris 1933, n° 3, p. 48-51. — DE LA TOUCHE F., *Les machines agricoles au XII<sup>ème</sup> Salon de la Machine agricole*, *La Vie agricole et rurale*, Paris 1933, nos 11 et 12, p. 183-186, 202-205, 10 fig. — After the Show: Coup d'œil sur la mécanique agricole, *Le Génie rural*, Paris, février 1933, p. 18-25. — VORMFELDE K., *12<sup>ème</sup> Salon de la Machine Agricole*, *Die Technik in der Landwirtschaft*, Berlin 1933, Nr. 2, p. 44-46, 6 Fig.).

H. J. II.

## Animal Husbandry.

### General.

RESULTS OF THE EXHIBITION AND SALE OF BREEDING STOCK AT BUDAPEST, HUNGARY. — The National Association of Hungarian Farmers held their annual exhibition of breeding stock in the last week of March. This exhibition which gives a good idea of the state of stock breeding in the Danubian countries, and naturally especially in Hungary, closed with satisfactory results. After the catastrophic results of 1932 this improvement is surprising, particularly if one considers the great difficulties with which stock breeding has to contend in this country. The figures in the following table will give an idea of the development.

	Number of animals exhibited		Number of animals sold		Percentage of sale		Value of animals sold (in pengő)		Mean price per head (in pengő)	
	1933	1932	1933	1932	1933	1932	1933	1932	1933	1932
Stallions . . . .	50	115	34	20	68	20	61 945	35 130	1 822	1 756
Mares . . . . .	22		7	7	31		4 265	6 150	608	879
Bulls . . . . .	273	652	260	235	90	39	171 925	143 999	662	613
Bullocks . . . .	—		—	—	—		—	—	—	—
Cows . . . . .	82	737	35	17	42	45	16 095	7 569	460	445
Boars . . . . .	484		465	288	90		83 480	40 567	179	172
Sows . . . . .	234	253	164	33	70	30	14 446	3 668	146	111
Rams . . . . .	—		—	—	—		—	—	—	—
Total . . . . .	226	—	118	75	51	—	10 475	7 810	89	104
	—	—	—	—	—	—	362 631	253 893	—	—

(*Allattenyésztők Lapja*, Budapest 1933; No. 7).

E. M.

### Feeding and Feedstuffs.

**PIG FEEDING EXPERIMENTS WITH RYE IN GERMANY.** — At the instigation of the Ministry of Agriculture of the Reich ten scientific Stations have carried out experiments on the use of crushed rye and crushed rye with molasses in comparison with crushed barley in the fattening of pigs. All the experiments were carried out on one uniform plan developed by Professors H. BUNGER, G. FINGERLING, F. HONCAMP and V. STANG.

The following are the principal results obtained :

(1) Although the daily gain was satisfactory the pigs fattened less well with large quantities of rye than with the exclusive use of barley. When 10 to 20 % of molasses was added to the crushed rye the results were nearly the same as with barley.

(2) To produce 100 kg. of live weight the food requirement in starch equivalent was maximum with rye and minimum with barley. The use of rye is profitable only if the price is lower than that of barley. The use of molasses was in this regard very favourable, as the present prices of this food are very low.

(3) In accordance with the results of these experiments farmers are recommended to give only half the ration in the form of rye if fattening is being effected exclusively with grain. If the basic ration is potatoes, only 1 to 15 kg. of rye should be given per head per day during the whole period of fattening. If one desires to use a greater quantity of rye it is advisable to mix with it 10 % of molasses or sugar.

(*Süddeutsche Landwirtschaftliche Tierzucht*, Munich, 1933, Nr. 1).

E. M.

### Cattle

**BREEDING OF BROWN ALPINE CATTLE IN HUNGARY.** — In consequence of the great demand for breeding stock of the Brown Alpine Cattle for export the Hungarian Ministry of Agriculture has decided to set apart a region for the raising of this breed. Although these cattle were bred in Hungary before the war there was no region devoted exclusively to the breed. The region chosen is situated in the north of the present territory of Hungary and the breeding stock will be introduced from Austria. The communes and the small breeders enjoy a 50 % reduction on the purchase price and the remainder may be paid, without interest, in equal instalments over a period of two years. For the moment the Ministry intends to distribute in this manner 60 cows and 20 bulls. The latter will serve also for cross-breeding with the indigenous cattle.

(*Allattenyésztők Lapja*, Budapest 1933, No. 6).

E. M.

**THE QUESTION OF DAIRY CONTROL, AT THE STOCK BREEDING CONGRESS OF PARIS 1932.** — The Stock Breeding Congress organised by the National Society for the Promotion of Agriculture took place with great success from 5 to 7 December 1932. A great number of resolutions and recommendations were passed concerning breeders' syndicates, syndicates of yield control, herd books, regulation of public service of bulls, the control of concentrated and compound feeds, mutual insurance against death of stock, etc.

The Congress considered it desirable that an international congress of dairy control should be organised as soon as possible for the purpose of working for the adoption of uniform rules for the carrying out of the control and the manner of recording the results obtained.

(*Revue de Zootechnie*, Paris, December, 1932).

S. T.

## S h e e p

**SHEEP IN THE FRENCH SUDAN.** — In this country two main groups of sheep may be distinguished : hair-yielding sheep, which number about 1 950 000, and wool-yielding sheep, of which there are 1 500 000. There are several types of hair sheep : the " Moorish " (of which there seem to be two races, one short-haired and one long-haired), the " Peuhls " and the " Touaregs ".

The Moorish short-haired sheep is similar to and sometimes difficult to distinguish from the Sudan goat. By continued cross-breeding it is evident that the hair sheep can be transformed to produce wool, but it would be a difficult matter to modify rapidly the customs of the nomad people to whom they belong.

Among the wool sheep is the Macina breed, which is of medium size and corresponds very closely to the ancient breed described by SANSON under the name of Syrian sheep. This breed supplies the proof that it is possible to breed wool sheep in the Sudan, the climate of the region where these sheep are found not being very different from that of the neighbouring zones. This sheep has a white, not dense fleece, often marked with black or brown on the head and the extremities, more rarely on the body. By continuous crossing with the Cape Merinos or the Rambouillet Merinos, the Macina flocks may be fairly rapidly transformed into good quality wool producing flocks, on condition however that the feeding is regular throughout the whole year. It has too often been forgotten in the new countries that the production of meat, milk and wool is closely dependent on improved cultural conditions.

(Ch. VOLTELLIER, *Revue de Zootechnie*, Paris, Septembre 1932, after M. CURASSON, *Le mouton au Sudan français*)

S. T.

**BREEDS OF SHEEP IN NORMANDY.** — Although Normandy possesses only a single breed of cattle, the sheep are of very different types.

To the north of the Seine, in the lower Seine, on the rich plateau of Caux, to the south of the river in the Eure and to the west of the Risle, also at the limits of the region of Bray, there are the " Caux " sheep. This sheep is tall, the ham is little developed, the head narrow and the back arched ; the ears are long and drooping. The fleece is loose, with rather coarse staple, which makes the sheep rather resistant to a moist climate, for it dries readily by shaking itself. This is the genuine nomad sheep. It is slow maturing, but a heavy feeder and can find its own livelihood in stubble and on waste land.

The number of Caux flocks has considerably diminished since, in consequence of improvements in land cultivation, intensive culture has been developed in these regions.

A closely related breed in aptitude and type is the " Trun " or " Trunienne ", which occupies the southern part of the plain of Caen and the plateaux which bound it on the east.

The plains of the Vexin Normand, of Verneuil, of Evreux and of Neubourg, breed Ile de France sheep, which produce both wool and meat.

The grassland regions of lower Normandy breed in the north sheep of the " Cotentin " and in the south of the " Avranchin " breeds. These two breeds have free range in small flocks. They are large animals with a wide chest, with short legs and a well developed ham, with a bald colourless head, with projecting eyes and a long and supple fleece.

The form, the early maturity, the wool and the prolific breeding capacity, of the two breeds are very similar. They differ only in the head, which in the Avranchin sheep is pigmented and has a greyish bristle. Both breeds produce heavy and quick-developing

lambs. There is a Flock-Book of each breed, the types being defined by a well established standard.

(L. LAUVRAY, Les races ovines en Normandie. (*La vie agricole et rurale*. Paris, 1933, No. 10, p. 160-161).

S. T.

## Goats

GOAT BREEDING : THE SUPERIORITY OF GOAT MILK. (*Alpes et Provence*, Ch. DEHAYES, 9 April, 1933). — There is still in France a certain amount of adherence to the prejudices against the goat which have been proved false by all who have undertaken goat breeding. Outside France stock breeders have better realised the advantages of the goat. Spain in consequence of its warm and dry climate takes the lead, with a goat population of 4 million head ; Germany follows with 3 million, while France has only 1 500 000. In the United States where goats are raised on the intensive system, companies have arisen for the manufacture and sale of condensed goats' milk. Since goats' milk has been used for infant feeding, infant mortality has diminished by 80 % ; this result may be attributed to the almost absolute immunity of goats' milk from tuberculous infection. In addition the milk, goat meat, hide and hair are all products which deserve to be industrialised.

The feeding has a great influence on the milk production. It is thus important to develop by a rational system the secretion of the mammary glands, in goats with a good capacity for milk yielding. There are in France three good breeds : the " Alpine ", the " Poitevine " and the " Nubio-Alpine ". The Alpine and the Nubio-Alpine, when well selected, give up to 1200 litres of milk per annum ; their milk is valued for its digestible qualities ; experiments have shown that the casein of the milk of the two breeds owes its digestibility to the friable and light nature of its coagulum, which is comparable with that of human milk ; chemically the two milks are closely related. The reasons for which goats' milk is so easily and rapidly digested are the fragility of the envelope of the fat globules, the rapid action of gastric juice on these thin envelopes, the delicacy of the fat, which is the lightest and most easily assimilated known, the small size of the casein molecules, the alkaline reaction, the large percentage of phosphorus and calcium and the excess of albumin.

D. K.

## Rabbits

TREATMENT OF COCCIDIOSIS OF THE RABBIT BY INJECTIONS OF OIL TREATED WITH THYMOL, TETRACHLORIDE. (*Comptes Rendus Hebdomadaires des Séances de l'Académie d'Agriculture de France* ; MM. MOUSSU and J. SIGAUD, 25 January, 1933). — Rabbit coccidiosis causes great losses among rabbits when the young are not carefully watched up to the age of three to four months. The disease is now controlled fairly effectively by making the animals digest certain antiseptic substances, particularly thymol. In practice the medicines must be mixed with the feed so that they will be readily taken by the diseased animals, which limits the possibilities to substances having no flavour or an agreeable flavour. M. J. SIGAUD in seeking an active economic drug against distomatosis of the sheep incorporated carbon tetrachloride with camphorated, dextrinated and thymolised olive oil to make it capable of subcutaneous injection. In his experiments on coccidiosis of the rabbit he obtained a very high percentage (96 %) of cures.

If the preparation of M. SIGAUD is definitely infra-toxic and is active in the dose indicated, namely 1 c. c. per day, there is no doubt that it may be applied to all animals after experimentation. It should then be utilised widely and give valuable service.

D. K.

## Agricultural Industries.

### Industries of Plant Products.

YEARBOOK OF THE ASSOCIATION OF PAST STUDENTS OF THE NATIONAL SCHOOL OF AGRICULTURAL INDUSTRIES OF DOUAI. — In the January number of *Agriculture et Industrie* (1933) this Association publishes a classified list of its members.

The monthly organ of the Association publishes original articles and a quantity of technical and economic information concerning agricultural industries and more particularly sugar manufacture, distilling and brewing.

G. R.

ACTS OF THE FIRST INTERNATIONAL BAKING CONGRESS. — Under the title *Atti del Primo Congresso Internazionale di Panificazione*, a volume of 516 pages has just been published in Rome by the National Fascist Federation of Bakers, which is under the Chairmanship of Ing. Arnaldo LURASCHI. A detailed account of the meetings of the Congress, which took place at Rome from 21 to 24 June 1932, is given. This is followed by the reports presented to the Congress and a short account of the exhibitions at Bologna and Rome, and particularly the World Exhibition of Bread.

G. R.

THE SULPHUR CONTENT OF WHEAT, ITS NATURE AND DISTRIBUTION. CORRELATION BETWEEN THE SULPHUR-NITROGEN RATIO IN WHEAT AND THE BAKING VALUE OF FLOUR. — By determining the total sulphur content of wheats and flours the writers, working with 22 wheats of very diverse origin, found that the sulphur content of wheat was always between 0.1 and 0.2 %. This sulphur is distributed in the following manner:—

(1) Mineral sulphates and sulphydric ethers—4 to 5% at maximum of the total sulphur.  
(2) Insoluble protide sulphurs, which constitute the greater part of the gluten; in this last the sulphur-nitrogen ratio is about 7 : 1000.

(3) Sulphur of soluble protides—in the protides washed out from a flour paste the S : N ratio is higher the lower is the value the flour is considered to have. As, however, this ratio is higher in meals from milling by-products it may be concluded that it is the protides of the sub-cortical layer of aleurone, of bad baking quality, which have the highest content in sulphur.

*Wheat classified according to the decreasing baking value of the flour.*

Origin of the wheat	Nitrogen %	Sulphur %	Ratio Total N Total S × 1000
Manitoba. . . . .	2.56	0.173	67.6
Marocco (A) . . . . .	1.93	0.138	71.8
Tunisia . . . . .	2.18	0.158	72.5
Russia (A) . . . . .	2.13	0.155	73.1
Russia (B) . . . . .	2.23	0.164	73.8
Algeria (A) . . . . .	1.98	0.148	75.0
Kansas . . . . .	1.95	0.152	78.3
Local wheat (A) . . . . .	2.21	0.172	78.1
Bulgaria . . . . .	1.80	0.141	78.4
Local wheat (B) . . . . .	1.68	0.130	78.4
Morocco (B) . . . . .	1.68	0.137	81.9
Algeria (B) . . . . .	2.03	0.163	81.3
Local wheat (C) . . . . .	1.35	0.118	87.6
Rye . . . . .	1.19	0.143	121.0

Thus nearly all the sulphur of wheats belongs to the protides: the richer are the soluble protides in sulphur the worse is the quality of the flour.

It is therefore possible to classify wheats according to the baking qualities of their flours, considering the S: N ratio either in the soluble protides or in the total wheat. The writers have classified in this way a certain number of wheat samples according to the mean of the results given by the various methods used in milling to determine the baking qualities of the flour; they determined also the sulphur and nitrogen contents and calculated the S:N ratio.

(*Comptes Rendus hebdomadaires des Séances de l'Académie des Sciences*, M. R. GUILLEMET and C. SCHILL, 3 April 1933, p. 1053-1054).

NEUTRALISATION OF FATS WITH A HIGH CONTENT IN FREE ACIDS BY MIXTURE WITH ALCOHOL-GLYCERINE. — Neutralisation of oils and fats containing more than 12 % free fatty acids by means of an alkaline solution is not economical and presents technical difficulties, such as separation of the soaps, etc.

Deacidification by alcohol is preferable, but it may bring into solution large quantities of neutral fat if the content in dissolved free fatty acids is high. It is necessary in that case to use dilute alcohol, which reduces the solubility of the fatty acids and makes the regeneration of alcohol costly, or else it is necessary to observe quantitatively the solution of the fatty acids, which presents great difficulties. E. SCHLENKER proposes to utilise the mixture alcohol-glycerine, which does not dissolve the whole of the neutral fat; the most beneficial mixture is that containing 66 % of alcohol and 34 % of glycerine. If a fat containing much fatty acid is treated with this mixture it forms two distinct layers: the upper layer contains the neutral fat, a small quantity of free acid and a small quantity of alcohol; the lower layer consists of the alcohol-glycerine solution containing the fatty acids and a small quantity of neutral fat. The regeneration of the two solvents presents no difficulty.

(*Allgemeine Oel & Fett-Zeitung*, Berlin 1933, Nr. 2).

G. S.

HYDROGENATION OF OILS AND NEW DETERGENTS. — Hydrogenation of oils in the presence of special catalysts, such as chromate of copper, zinc, etc. at high pressure (200 atmospheres) and at a temperature of about 350°C causes a greater reduction of the fats, transforming them into COOH groups (carboxyl) and CH<sub>2</sub>OH groups (alcohol).

The production of these higher alcohols was already of some importance for the preparation of the aldehydes used in the perfume and drug trade. Now these alcohols are sulphonated by sulphuric acid on the basis of the patented processes of LAZIER and SCHRAUTH. New detergents are obtained which have very interesting properties as emulsive substances and for washing in hard waters and sea water without loss of material. These products also form solutions which are completely miscible with those of soaps and do not become rancid.

(*L'industria saponiera*, Milan 1933, No. 2).

G. S.

THERAPEUTIC USES OF ESSENCE OF BERGAMOT. — The following are the conclusions of a study by R. M. GATTEFOSSE which was successful in the "Bergamot Competition" organised by the "Consorzio del Bergamotto" of Reggio Calabria, Italy.

(1) Bergamot essence is an antiseptic as powerful as phenol, creosote and guaiacol, but is not toxic or caustic and has no disagreeable odour. This essence

gives excellent results as an antiseptic for man and animals and for the disinfection of buildings (hospitals, etc.).

(2) this essence is a good analgesic for internal use when deterpinated and is excellent for making wounds heal rapidly.

(3) The essence is also an excellent and powerful antiseptic without toxic effects in the treatment of respiratory affections, tuberculosis, and affections of the digestive and urinary tracts.

G. S.

UTILISATION OF THE "PACO-PACO" (*URENA LOBATA*) FOR THE MANUFACTURE OF TEXTILES IN BRAZIL. — At São Paulo a large textile factory has begun producing from the fibre of the paco-paco coming from the valley of the Amazon, a textile similar to "palm-beach" and having all the qualities of the American material.

(*Les Produits Coloniaux et le Matériel Colonial*, Marseilles 1932, No. 100).

G. S.

### Industries of Live-stock Products.

DRY ICE FOR THE TRANSPORT OF MILK IN URUGUAY. — The transport of milk in this country is now effected by rail and camions without refrigeration or insulation. The work cited below shows the advantages of the utilisation of dry ice in the transport of milk to Montevideo. The writers reach the conclusion that the dry ice utilised as refrigerant in the milk transport experiments made it possible for milk to reach Montevideo with a bacterial content of less than 1 500 000 per cubic centimetre, which is the limit established by the Municipality as necessitating pasteurisation. A positive reaction to the alcohol test of milks refrigerated with dry ice was found to have no hygienic significance.

(P. MENENDEZ LEES and G. BERGERET; *El hielo seco en el transporte de leche en el Uruguay*, 15 págs, bibliografía. Estacion experimental del Frio de la Facultad de Agronomía, Montevideo, 1932).

A. P.

ARTIFICIAL COLD IN THE CHEESE INDUSTRY IN URUGUAY — During the summer there is a quantity of milk obtained in Uruguay in consequence of the practice of making all the cows to calve at the same time. The milk is used for direct consumption and for butter and cheese making. It is proposed in the article cited to study the effects of freezing on one of the types of cheese most used in Rio de la Plata: the "Chubut", a semi-hard dessert cheese obtained by boiling and slight pressure. It is made with fresh milk, as follows: the milk, previously coloured with a pigmented solution (4 to 6 c. c. per 100 litres), is coagulated at 30 to 32°C for half an hour, then the curd is cooked at 38 to 40°C until the whey separates, which process takes 50 to 60 minutes. Salting is effected in 24 hours in concentrated brine. Maturation requires 3 to 4 weeks with a temperature of 18 to 20°C and a humidity of 86 to 90 degrees. In general the weight of these cheeses is a little less than 1 kilo. Their dimensions are approximately 10 cm. in diameter and 7.5 cm. in height. There are on the market certain varieties of this cheese which differ in size and shape and have certain small differences in the technique of manufacture. Analyses of several samples of cheese are given.

The writers consider that the use of artificial cold should be generalised in the cheese industry of Uruguay for the following reasons:—

(1) It will make it possible to supply the consumer with a uniform product.

(2) The fermentation being more regular a product of better quality and of more agreeable flavour and appearance will be obtained.



(3) The requirements for consumption can be supplied with regularity, as the retarding action of the cold on maturation will make it possible to use the milk advantageously at the season of greatest production.

(4) The reduction of losses by evaporation and wastage and the improvement of the quality of the cheese will compensate for the costs of installation and of the working of the refrigerating plant in the cheese factories.

(P. MENENDEZ LEES and G. BERGERET, *El frio artificial en la industria quesera del Uruguay*, *Revista de la Facultad de Agronomía*, Montevideo 1932, No. 7, 11 págs, bibliografía).

A. P.

## Agricultural Training.

PREPARATION FOR THE AGRICULTURAL DIPLOMA IN THE LOIR-ET-CHER, FRANCE. — The *Bulletin de l'Office de Renseignements agricoles* for January 1933 gives the programme of the course for preparation for the agricultural diploma for students of rural institutes in the Department of Loir-et-Cher. The course consisted in 60 discussion lessons, simple laboratory exercises, practical horticultural exercises and various excursions. M. G. BUCHET, Director of the Agricultural Services, gives the programme of the examination and states that the candidates, the average age of whom was 37 years, had profited to a remarkable extent from the method of instruction followed.

G. R.

COLLABORATION IN THE FIELD OF THE AGRICULTURAL SCIENCES. — In a report on Collaboration in the Field of the Agricultural Sciences in the Balkan States presented to the III Balkan Conference, held at Bucharest 22-29 October, 1932, Prof. CHIRITZESCO-ARVA, Deputy to the Rumanian Chamber and Professor at the Academy of Higher Agricultural Studies in Bucharest, has put forward some very interesting suggestions. The general tendency, he says, will be in the first place to establish relations of as close collaboration as possible between the State or private agricultural institutions of a scientific or advisory character on the one hand, and the scientific or professional associations on the other.

The institutions for higher agricultural training in 5 States will be able to collaborate in inaugurating and establishing these relations and to form centres round which in each State a fixed programme may develop. By as active as possible an exchange of scientific works and of teachers for the organisation of cycles of lectures, and by an exchange of students, particularly for purposes of specialisation, or of farming experience, it will be possible more easily to create a realisation of the necessity of such collaboration, to bring about uniformity in research methods, to produce specialists in the various branches and finally to obtain a more active circulation of the capital of agricultural science among the Danube and Balkan States.

The report recommends also the formation of museums in connexion with the Academies of Agriculture and the organisation of a Congress of the teaching and scientific staffs of the institutions for agricultural training and research. The writer suggests also the publication of a periodical of scientific and economic character and the establishing of contact between the members of the Chambers of Agriculture and those of all other professional organisations of agricultural character.

G. R.

## Agricultural Research.

IMPERIAL INSTITUTE OF ANIMAL, HUSBANDRY AND DAIRYING, BANGALORE. -- This Institute, which is under the control of the Imperial Department of Agriculture in India has an annual income of Rs. 116,500. It was founded in 1923. The staff consists of 5 technicians and 90 employees and the Director: Zal R. KOTHAVALA, B. Ag. (Bom), B. Sc. Agri. (Edin), N. D. D (Scot), Imperial Dairy Expert.

The principal activities of the Institute have been the investigation into various problems relating to dairy farming under tropical conditions, *e. g.* : breeding of pure

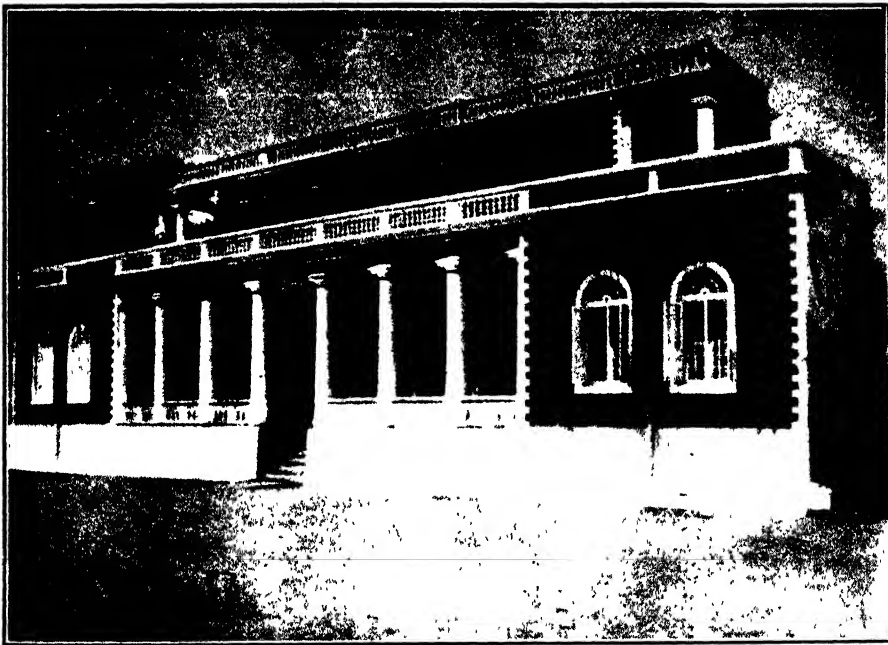


FIG. 1. -- Main Dairy Building, Imperial Institute of Agriculture, Animal Husbandry and Dairying, Bangalore, India.

dairy strains of Indian breeds; production, handling, treatment and distribution of market milk; manufacture of products and by-products of milk, such as butter, ghee, (melted butter), cheese, casein, etc

The Institute makes known the results of its researches by means of publications appearing in the journal *Agriculture and Livestock in India*. The language customarily used in correspondence is English.

The teaching programme includes the Indian Dairy Diploma Course (theoretical and practical) which has a duration of 2 years. The Diploma is given by the Government of India.

Affiliated to the Imperial Institute of Animal Husbandry and Dairying, Bangalore, is the Animal Nutrition Section under the Physiological Chemist to the Government of India.

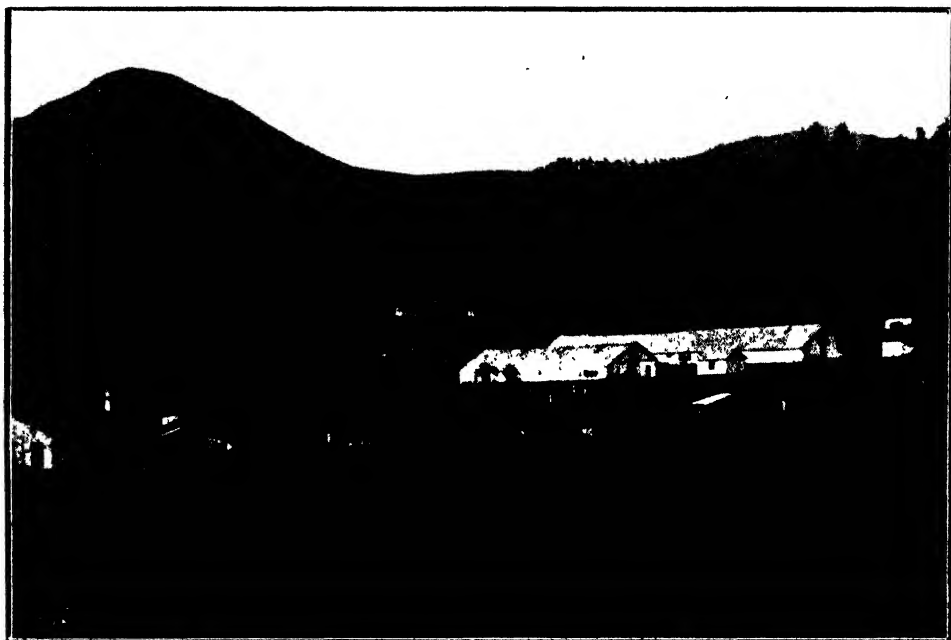


FIG. 2. — View of Farm, Imperial Institute of Agriculture, Animal Husbandry and Dairying, Wellington, India.

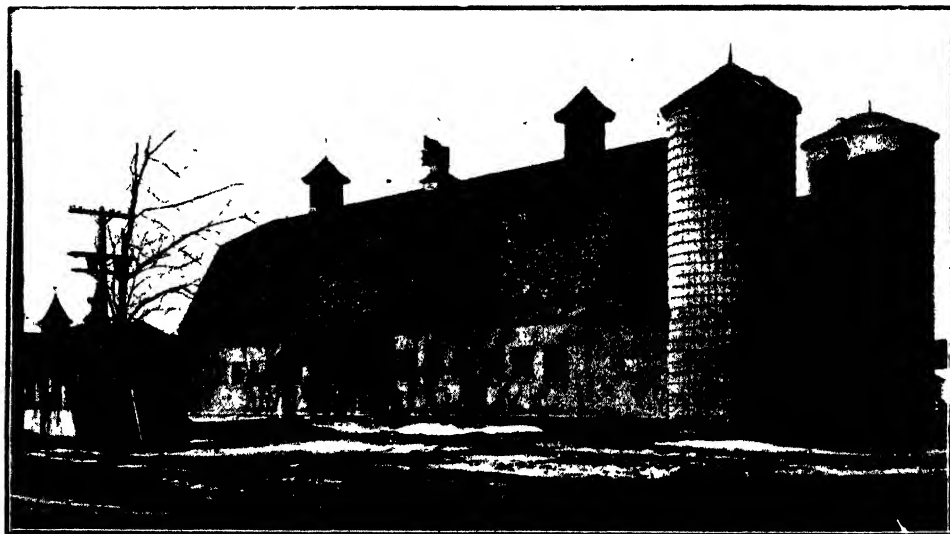


FIG. 3. — Main Dairy Barn, North Dakota State Agricultural College and Experimental Station, Fargo.

IMPERIAL INSTITUTE OF ANIMAL HUSBANDRY AND DAIRYING, WELLINGTON. — This Institute also is under the Imperial Department of Agriculture in India and was founded in 1923. It is a branch of the Bangalore Institute and is under the same Director. The annual income is 49,500 rupees. The staff consists besides the Director of two technicians and there are 33 additional persons engaged.

The investigations of the Institute relate to the same subjects as those studied at Bangalore and the results are published in the same journal. Correspondence is usually in English.

The teaching consists of a fifteen months' post-graduate course in animal husbandry and dairying (practical and scientific investigations), at the end of which a certificate of merit is given by the Government of India.

DEPARTMENT OF DAIRY HUSBANDRY OF THE NORTH DAKOTA STATE AGRICULTURAL COLLEGE AND EXPERIMENT STATION, FARGO, UNITED STATES. — This Station was founded in 1892. Its budget is of 18,000 to 25,000 \$. The chairman of the Department is James R. DICE, A. M., the staff consists of 3 technicians and 4 other persons.

Work carried out during recent years concerns the reduction of acidity in sour cream, the control of metallic flavour in small pasteurizing plant, projects on the value of different feeds for cows and shelter studies.

A biennial report is published by the Experiment Station and also bulletins and circulars. The correspondence is carried on in English.

The teaching programme consists in a 4 years' course in agriculture with a Major in Dairy. An occasional short course for creamery operators and buttermakers and one in Farm Dairying are given. The duration of studies is 4 years with College diploma B. S. degree.

E. G.

## Rural Hygiene.

THERAPEUTICAL USES OF ESSENCE OF LAVANDER. — In the November 1932 number of *Partumette moderne*, R. M. GATTFOSSE draws attention to the fact that numerous observations have shown that the essential oils and especially essence of lavender possess a remarkable bactericidal and healing action, which is still little known. He recommends the use of deterpinated lavender essence which gives a clear solution in water by the addition of sulphoricinate of sodium and sylvamine. Emulsions may also be used. The antiseptic action of lavender essence is successfully utilised in the treatment of burns, washing of wounds and the cleaning of infected wounds. Lavender essence is also used in the treatment of venereal disease. The writer gives a certain number of formulae for the preparation of antiseptic products on a basis of lavender essence, for example, antiseptic powder by mixing 5 grams of deterpinated lavender essence with 100 gms of powdered borax, 10 gms of this powder to be used in 1 litre of tepid water.

G. R.

## Forestry.

EXTENSIVE ORGANISATION IN SWEDEN FOR THE ENCOURAGEMENT OF A RETURN TO THE USE OF WOOD FOR FUEL. — Constantly increasing efforts are being made in Sweden to encourage the larger use of native wood for fuel with the double purpose of avoiding the foreign purchase of coal and of providing work for the unemployed. According to Mr. V. LOTHIGIUS (*Skogen, Stockholm* 1933, Nos. 3 and 5), it is in the first place necessary that coal consumers should substitute wood for coal, employing a judicious propaganda

to inform them that the use of wood for heating purposes is not more expensive than the use of wood. In the next place such arrangements must be made as will enable the consumer to obtain his wood at convenient times and in the sizes and shapes that are best adapted to his own type of heating apparatus. Forest owners or an association of forest owners should be responsible for providing supplies at a fixed price without the intervention of third parties.

It is quite clear that in order to secure these ends, some form of organisation is necessary, which may well vary according to local conditions. The writer suggests as a model the organisation which has already been set up and is in full working order in the Province of Jönköping, where the «Skogvårdsstyrelsen» or local forestry administration and the local Forest Owners' Association have instituted in each of the 95 communes of the Province a special «Fuel Committee» of which the members are local forest owners. Each Committee has three members who are responsible for : (1) securing that types of heating apparatus suitable for employing wood fuel are installed in all new buildings — (2) securing that communal institutions adopt systems of heating by wood fuel — (3) making every effort to bring about the utilisation of wood charcoal fuels for driving the municipal motor vehicles, lorries, tractors and fixed motor driven plant — (4) inducing local forest owners to support any propaganda carried out to increase the use of wood, etc. In the towns and larger communes the Fuel Committees should secure as far as possible that the larger fuel consumers should use wood and arrange for the installation of practical forms of stores and bring together manufacturers and users of such stores.

A Provincial Fuel Committee («Länsbranslekomité»), established in February 1933, representing the various interests concerned and possessing technical elements, serves to co-ordinate the propaganda and other activities and as an advisory organ. Its principle duties are as follows. (1) to arrange that communes and private persons should experiment with wood fuel in already existing stores and heating plants; (2) to see that the manufacturers put on the market simple and inexpensive stoves; (3) to organise effectively the production and distribution of wood material; (4) to arrange practical demonstrations and trials, (5) to make efforts to secure the use, for driving motors, of fuels derived from wood.

Although quite recently established this body has already obtained some promising results and among them the following: the managing body of a hospital now being built has decided to install a heating plant for the consumption of wood fuel; in an agricultural college experiments are being made with different kinds of wood stoves; in a barracks modifications are being made in the existing heating plant with a view to the adoption of wood fuel. A People's School is experimenting with heating with wood fuel. The Communal Fuel Committees also report that the co-operative dairies are increasingly adopting wood for heating purposes.

According to *Skogen* (Stockholm 1933, No. 2), following on action taken by the body responsible for the management of State Buildings, etc., it has been arranged that for this season wood shall take the place of coal in the heating service.

A number of other State institutions are also wood heated. The propaganda bodies up to November 1932 had been successful in substituting 90,000 cubic metres of wood fuel for coal and in the future they will also devote their attention to public institutions other than those of the State. For Stockholm alone it is estimated that it should be possible to obtain customers for 30,000 cubic metres of wood.

The *Dansk Skovforenings Tidsskrift* (Copenhagen 1933, No. 4) states that this movement, which began in the province of Jönköping, is now spreading throughout Sweden.

PRACTICAL DEMONSTRATIONS FOR THE ENCOURAGEMENT OF THE USE OF WOOD AS FUEL IN DENMARK. — The *Dansk Skovforenings Tidsskrift* (Copenhagen 1933, No. 2) reports that the second forestry district of the Sor Academy (Seeland) in February 1933 arranged for demonstrations of three new and improved types of wood-stoves in all the villages of the districts. The stoves were mounted on a lorry and shown in full working order under a small penthouse, causing keen interest among the village folk, who up to the present had to be satisfied with coal burning stoves of old fashioned patterns.

In addition to the stoves samples of wood fuel for use in dairies, properly dried and in suitable dimensions, etc. were also exhibited. It is considered that practical demonstrations of this order might with advantage be repeated throughout the country, particularly at the present time when the question of the use of wood for fuel in the co-operative dairies seems to be so nearly solved. The opportunity could also be taken for exhibiting a large variety of specimens of implements manufactured in wood, including farm equipment, etc., tar paints for wooden buildings and the like. Such exhibitions should take place every year at regular dates.

R. W.

PRACTICAL MEASURES TAKEN IN SWITZERLAND TO RELIEVE THE CRISIS IN THE TIMBER TRADE — M. E. COFFIN, writing in the *Bulletin du Comité des Forêts* (Paris 1932, No. 53), reports that the work carried out by the Forestry Association of the Canton de Vaud has given excellent results. This Society consists of the owners of forests in the Canton de Vaud which includes 188 communes and 58 private owners, and the members, while reserving the technical management of their forests, entrust the Society with the general safeguarding of their interests and employs it as agent for their sales.

In 1931 there was a collapse of the conifer market in France and in Germany and the Swiss market with France was deeply affected. Importation of timber from Germany to German Switzerland largely increased so that purchases from this area by Latin Switzerland ceased and in September 1931 the falling off for wood in the log amounted to 25 %. The effects of the crisis were particularly severely felt in the case of timber for cellulose (with a 50 % drop in purchases in 1931), in the market for fuel timber, for beams, etc. In face of this situation the Forestry Association for the Canton de Vaud put a check on the fall by establishing a scale of prices for building and furniture timber, which all members undertook to respect. By thus undertaking temporarily to submit to certain necessary sacrifices of their own free will (for they made no engagement in writing), the members gave an admirable example of sound discipline and corporate feeling.

This measure was accompanied by a restriction in fellings, active efforts to secure markets and pressure on the Federal Government, which withdrew in 1931, from its commercial treaty with Germany and rationed its imports.

Following on this action, from February 1932 onwards, the market for sawn timber began to improve and during the course of the year, the Swiss German customers began to purchase again in the Canton de Vaud. To-day the Forestry Association of this Canton is in a position to state that the prices fixed by its Directive Council will be maintained and that the owners can reckon to sell during 1933 the normal product of their forests.

In addition the Association has taken action in regard to the serious question of the falling-off in the use of timber due to its substitution for building purposes by other materials, such as metals, concrete, etc. In this connection the Association has em-

barked on a very active propaganda and there has been an increase in the number of Swiss citizens who are interested in the numerous uses to which wood and timber can be placed.

The technical studies and propaganda that are being made on behalf of wood and timber are naturally of interest not only to the owners of the forests but also to timber merchants and to manufacturers of wooden goods. Hence a Federal inter-trade and professional body was set up in 1931. This is known as the Swiss Union for the encouragement of the use of wood or «Lignum», and its membership includes forestry associations, industrial and trading societies and railways, together with private individuals, engineers, contractors, architects, etc. The programme laid down for the Society, which is particularly valuable from the point of view of the interests of wood and timber may be summarised as follows:—

I. *Organisation* – II. *Production of high quality timber* (various studies in the technical aspects of Silviculture) – III. *Instruction* (in building construction in Schools and Technical Institutions) – IV. *Regulations regarding buildings and fire risks, capital investments, insurance* – V. *Technique and architectural principles in building construction* (study of new methods applicable to house building, farm buildings, public buildings, bridges, timber framings, etc.) – VI. *Protection of forests and timber* (against insect and fungus pests and also against fire; special reports and studies, competitions) – VII. *Special requirements as regards timber quality* – VIII. *Scientific studies on wood and timber* – IX. *New uses of wood* – X. *Use of waste products* – XI. *Publicity and propaganda* – XII. *Relations with other countries.*

R. W.

## BOOK NOTICES \*

### Cattle Raising.

CAMENZIND Th., *Handbuch der Rindviehzucht und Pflege*, 12 vollständing umgearbeitete, vermehrte und verbesserte Auflage, 400 Abb., 12 Kunstdrucktafeln, 505 p. s. Deutsche Tierzucht Verlags- und Handelsgesellschaft, Andrist & Co., Leipzig, 1931.

This is the 12th edition, entirely revised and enlarged, of a work intended to provide all interested in dairying with a popular account of the theoretic and practical bases of dairy cattle raising. In view of the purpose of the book special attention is given to the question of the udder and milk secretion. A general account is also given of the importance of breeding, structure and physiology, the history and recognition of breeds, selection, care, and feeding. Other chapters are concerned with gestation, birth and diseases. A supplement is devoted to the breeding of pigs.

S. T.

### Meat.

*Taschenbuch der Fleischwaren-Herstellung einschliesslich Konservierung*, unter Mitwirkung von Fachleuten aus Praxis und Wissenschaft bearbeitet von Dr. med. vet. Felix GRUETNER. Braunschweig 1932, 560 p. (Verlag Dr. Serger und Hempel).

In the course of several centuries the preparation and curing of meat have reached a high degree of perfection in Germany. The experience acquired has been collected in a number of books, each containing some feature of novelty. The keen competition

\* Under this heading are included brief synopses of books received for review.

in each branch makes it necessary for persons concerned to possess, in addition to works dealing with the details of the industry, a small manual giving a brief and accurate account of the most important questions. This is the purpose of this book which endeavours to cover in a concise form the whole field of the preparation and curing of meat, with special reference to the most important matters from a practical standpoint. It has been necessary to treat also the relationships between the main subject and other branches of the general economy, such as stock breeding, sanitary legislation, utilisation of the by-products, protection of the workers, etc. Experienced practitioners and experts have given the writer the benefit of their valuable collaboration in certain special subjects.

S. T.

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(1) Previous list March 1933. To be continued September 1933.

(2) List of abbreviations: biheb. (biweekly); bimens. (twice monthly); bimestr. (every two months); étr. (foreign price); heb. (weekly); int. (home price); irr. (irregular); mens. (monthly); N. S. (new series); q. (daily); sem. (half yearly); s. (series); v. (volume); trim. (quarterly).

(3) Between brackets [/] are given translations and explanatory notes not appearing in the title of the review.

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Prof. ALESSANDRO BRIZI, *Segretario generale dell'Istituto, Direttore responsabile.*

# **PLANT PROTECTION**



# INTERNATIONAL BULLETIN OF PLANT PROTECTION

## DISCOVERIES AND CURRENT EVENTS \*

### North Africa: Desert Locusts (*Schistocerca gregaria*) (1).

During September 1932 no information was received at the Regional Station of Algiers from Algeria, Tunisia, Morocco and Tripolitania.

#### ALGERIA.

- 7 October 1932 -- A pink swarm (with some yellow individuals) coming from the S. E. settled in the palm plantations of Tidikelt and Aoulef. It departed on the 10th flying W. N. W.
- 9 " " -- A small yellow swarm coming from the S. passed over Tamanrasset.
- 11 " " -- A large swarm settled in the region of Imérage (Aoulef) seems to have flown north.
- 19 " " -- A large red swarm coming from the S. settled at Khechiba (25 km S. of El-Goléa). It departed on 20th flying N. N. E.
- 31 " " - A small red swarm coming from the N. passed over Beni-Ounif flying S.
- 20 November " -- A swarm coming from S. W. passed over Ksour Tabelbala flying N. E.  
A scattered red swarm coming from S. W. passed over Beni-Abbes flying N. E.
- 26 " " -- A red swarm of medium density coming from S. W. passed over Menouarar (Colomb-Béchar) flying N. E.
- 28 " " -- A large red swarm settled 8 km N. W. of Colomb-Béchar, flew away towards N. E.  
A large swarm passed over Abadla (Colomb-Béchar) flying N.  
A somewhat dense red swarm settled at Daoura (Tabelbala).

\* Under this and the third heading the countries are arranged in French alphabetical order.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.



## FRENCH MOROCCO.

- 16 October 1932 — A red swarm  $10 \times 2$  km passed over Azaghar Tagmout (90 km S. E. of Taroudant).
- 11 November » — A grey swarm  $20 \times 5$  km. coming from the S. settled in the evening 30 km. S. S. W. of Taroudant. It departed on the 12th flying first E. and then N. W.
- 12 » » — A large swarm coming from the S. E. passed over the forest of Ademine (35 km. S. E. of Agadir) and then flew N. E.
- 13 » » — A swarm reported on the 11th and 12th 30 km S. S. E. of Taroudant settled near Oued Issene (28 km E. of Agadir).  
A swarm coming from the S. settled 50 km E. S. E. of Agadir.
- 15 » » — A swarm  $4 \times 2$  km coming from the S. settled on the Aït Tinkert (30 km N. N. E. of Agadir).
- 16 » » — A swarm  $5 \times 4$  km passed 70 km E. S. E. of Mogador.
- 17 » » — A swarm coming from Haha (Region of Mogador) passed over Argta.  
A pink swarm  $5 \times 3$  km coming from the Chiadma settled at Tighurst. It left on the 18th flying N. and passed over Sidi-Mokta (between Mogador and Chichaoua).
- 18 » » — A large red swarm coming from the Haha settled at Mtougha, took flight and settled again on the 20th S. of Imi N'Tanout ; part took flight again towards the N. E. Numerous large swarms reported between Cap Juky and the Drâa (Rio de Oro).
- 19 » » — A large swarm settled in the region of Tarjicht (80 km N. E. of Tiznit).
- 21 » » — A swarm of  $40 \times 4$  km passed to the S. of Agga flying N. A pink swarm coming from the S. settled at Angherif (Tatta).
- 25 » » — A large red swarm passed 15 km W. of Imi N'Tanout flying N. E.
- 26 » » — A red swarm coming from the S.,  $5 \times 3$  km, passed Maguenoum (48 km E. S. E. of Taroudant) flying E.
- 28 » » — A red swarm of 100 sq. km coming from the S. settled at Fezna Dijorf (12 km N. W. of Erfoud).  
A red swarm of 10 sq. km. coming from the W. settled at Tafilalet.
- 28-29 » » — A red swarm  $2 \times 4$  km coming from the N. settled in the night 65 km E. of Cap Chir.
- 29 » » — A large dense swarm passed over Ait Tinkert.

**French West Africa: Desert Locusts (*Schistocerca gregaria*) in Mauritania (1).**

- 24 September 1932 -- A very large pink swarm coming from the S. passed over Atar flying N. with a hot S. E. wind.  
 5 October " — Hopper bands in the region N. of Maudjeria (Tidjikja).  
 5-10 " " — Large pink swarms with some yellow individuals coming from the S. passed over the Circle of Adrar flying N.

**Eritrea: Tropical Migratory Locusts (*Locusta migratoria migratorioides*) (2).**

During October 1932 only very few swarms of *Locusta migratoria migratorioides* were reported in the western and eastern plains.

On the 2nd and 10th numerous individuals of unknown colour coming from Agordat flew in a south-westerly direction; on the 15th more locusts passed over Ducambia and Agordat.

On the 27th a dense swarm coming from Abyssinia entered the territory of Eritrea over the plain of Baduma, but immediately crossed back over the frontier.

On the 12th in the eastern plain a number of yellowish locusts coming from the south flew north.

During the whole month numerous bands of hoppers appeared in the territory of Cheren, in Hamasien and Acchelé Guzai.

In the western plain about 20 hectares of doura (*Andropogon Sorghum*) and bultuc (*Pennisetum typhoideum*) were damaged at Barentú during October; at Ducambia numbers of fields of doura were also spoilt.

Extensive crops of doura were attacked in the region of Cheren, Begiuk, Bab Giangheren, Ad Tacles, Ad Témariam, Bet Galerú, Ad Adembes, Ad Zamat.

**United States of America: Tomato Late Blight (3).**

A destructive outbreak of tomato late blight in Massachusetts is reported by O. C. Boyd and E. F. Guba. Whether the fungus (*Phytophthora infestans* De By.) on tomatoes is identical in all respects with that on potatoes or is a biologically distinct strain is still an open question in the United States. This disease has, hitherto, only been observed occasionally on tomatoes in New England, and has caused only minor injuries to foliage or fruit. The last outbreak of any severity in

(1) Communication from the Government General of Algeria (Direction des Services Économiques) to the International Institute of Agriculture.

(2) Communication from the official correspondent of the Institute, Dr. Rolando GUIDOTTI, Chief of the Agricultural Bureau of Eritrea, transmitted by the Government of the Colony.

(3) Communication from the official correspondent of the Institute, Dr. Neil F. STEVENS, Senior Pathologist, Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington.

Massachusetts occurred in 1905 and judging by the reports, it was rather insignificant compared to the destruction caused this year.

Beginning about the middle of September on early tomatoes in Worcester and Bristol Counties the disease spread rapidly to late varieties, and attacked both young and old plants, in some instances destroying not only the early plantings but the later ones as well. Its progress was apparently favored by cool wet weather including clear nights with heavy dews.

By the middle of October, the disease was causing large losses to the fall green house crop of tomatoes, and seems to be especially severe in leaky green-houses and in those where the growers have practised careless methods of watering or have failed to heat and to ventilate properly. It is not yet possible to estimate the extent of loss but it will obviously be large. One serious economic effect is that the presence of the disease has stopped all speculative buying since tradesmen realize that diseased lots will rot in the packages.

### India: New Diseases in the Bombay Presidency (1)

The following parasites have been recorded for the first time in the Bombay Presidency:

- (a) A species of *Uredo* probably *Uredo ficæ* (*Cerotelium ficæ* [Cast.] Arth.) on *Ficus benghalensis* L.
- (b) *Puccinia helianthi* Schw. on *Helianthus annuus* L.
- (c) A species of *Striga* on *Paspalum scrobiculatum* L.

It may also be noted that a race of bacteriophage specific against *Pseudomonas citri* Hasse has been isolated from leaves of citrus affected by citrus canker.

### Latvia: Crop Diseases observed in 1932 (2).

During 1932 no serious damage due to plant diseases has been reported.

Oats were however more severely attacked by *Puccinia coronifera* Kleb. than usually. Sugar beet tops were frequently attacked by *Cercospora beticola* Sacc. Fairly frequently cases of infection with *Sclerotinia fructigena* Schröt. on apples and *Scl. cinerea* (Bon.) Schröt. on cherries were detected. *Podosphaera leucotricha* (Ell. et Iwerh.) Salm. made its appearance in two nursery gardens. *Cronartium ribicola* Dietr. and *Septoria Ribis* Desm. caused premature dropping of the leaves of black currant. Attacks of *Peronospora spinaciae* Laubert were also reported on vegetables. Tomatoes were attacked also by *Didymella Lycopersici* Kleb., *Septoria Lycopersici* Speg. and *Cladosporium fulvum* Cooke et Rav.

(1) Communication from the official correspondent of the Institute, Dr. B. N. UPPAL, Plant Pathologist to Government, Bombay Presidency, Poona.

(2) Communication from the official correspondent of the Institute, Professor Max EGLITS, Phytopathological Laboratory of the University, Riga.

## Turkey: Certain Insect Pests of Crop Plants in Western Anatolia (1).

According to information supplied by Mr Nihat Schevket bey, Director of the Entomological Laboratory of Smyrna, newly planted vines, grafted vines, sown crops, nursery gardens and tobacco fields have been seriously damaged by *Opatrum verrucosum* Germ., *Opatroides punctulatus* Brull. and *Gonocephalum rusticum* Oliv.

The worst damage was in the vicinity of Smyrna and particularly in tobacco growing near uncultivated fields, vineyards and gardens.

Control method :— The land to be planted with tobacco is ploughed again before planting out the seedlings. A poison is prepared by mixing well 10 kg of bran, a half kilo of Paris green, a little molasses and a little water. The mixture is spread on the fields in little heaps about the size of a walnut 2 to 4 days before the tobacco is planted out. To prevent the heaps drying out too quickly they are covered over with leaves and green weeds. The insects during the day seek cool damp places for shelter, eat the bran and are poisoned.

## VARIOUS QUESTIONS

### Resolutions of the Second International Conference for Anti-Locust Investigation (2).

Acting on the suggestion contained in the fifth resolution of the International Meeting for the Study of the Locust Problem which met in Rome, September 28-October 1, 1931, [see this *Bulletin*, 1932, No. 1, pp. 6-10], the French Government organised the Second International Conference for Anti-Locust Investigation in Paris on the occasion of the Fifth International Entomological Congress (15-23 July, 1932). Representatives of Belgium, the British Empire, Egypt, Spain, Ethiopia, Italy, Liberia and France were present.

The following resolutions were passed : —

The Second International Conference for Anti-Locust Investigation, taking cognizance that all prerogatives of the International Institute of Agriculture of Rome resulting from the International Convention of 31 October 1920, relating to the organisation of locust control, remain unchanged, and being regarded as of purely scientific standing, proposes as follows : —

#### (4) General Questions.

I. — The members of the Second International Conference for Anti-Locust Investigation are unanimously agreed that an effective control of locusts in Africa

(1) Communication from the official correspondent of the Institute, Mr M. SUREYA, Councillor of State, Ankara.

(2) From the Report of the meetings of the Conference prepared by the Ministry of Foreign Affairs of France.

and Western Asia cannot be achieved by the isolated efforts of each single State and Colony. Studies carried out in recent years show conclusively that there exists a close interdependence between locust invasions over vast regions.

II. — All local efforts at control have up to the present been exclusively defensive in nature and no genuinely satisfactory solution of the locust problem can be hoped for except by a rational organisation of scientific investigations in the zone in which originate the swarms that disperse over the continents.

When the breeding grounds are known and the conditions leading to the production of swarms have been studied it will then be possible to draw up a scheme of defence to prevent in future the multiplication of locusts.

III. — Investigation of the locust breeding and migration must be conducted on an international plan with the full cooperation of all the States concerned in the locust problem.

At present there is official cooperation only between Belgium, Great Britain, France and Italy with their Colonies and Protectorates.

The following States must be invited to collaborate in the international research: Afghanistan, Arabia (Hejaz and Nejd, Yemen, Oman), British India, Iraq, Persia, Portugal, Turkey and the Union of Socialist Soviet Republics.

In the course of the Conference the representatives of Abyssinia, Spain, Egypt and Liberia undertook to present for the approval of their respective Governments the various proposals of the Conference, already passed by their Delegates.

IV. — A general plan of research drawn up without losing sight of the necessity of obtaining practical results within a reasonable time, comprises two main conceptions.

One is the centralisation and study of all locust data in a single scientific institution.

The other is the discovery and study of the original breeding grounds by entomologists specially appointed for the work

V. — The decision of the First International Meeting of Rome, recognising the Imperial Institute of Entomology of London as the International Centre for Anti-Locust Investigation is finally accepted by the present Conference. This Conference lays special emphasis on the need for all the States of Europe, Africa and Western Asia which are subject to locust invasions to cooperate with the International Centre.

VI. — The international investigations are to be under the general direction of and coordinated by the International Conferences for Anti-Locust Investigation. These Conferences should continue to meet annually.

It is eminently desirable that the States taking part in the international investigations should be represented at the Conferences by locust specialists, with a view to the discussion of their work and to ensure for the following years the coordination of locust investigations from all points of view.

The Third International Conference will be held in London in 1933 if the British Government is willing to accept the suggestion.

(B) Programme of the International Centre for Anti-Locust Investigation, in London.

I. — One of the principal functions of the International Centre for Anti-Locust Investigation, London, consists in assembling all the useful information on the breeding and migration of locusts.

For this purpose it would be advisable to ask all the States cooperating in the investigation : —

(a) to organise a system by which all swarms and all cases of breeding will in each State be communicated by the administrative personnel to a local Centre;

(b) to provide for the monthly condensing of these local reports and their transmission, together with maps drawn up in accordance with the system of signs adopted by the International Meeting of Rome [see this *Bulletin*, 1932, No. 1, p. 10], to the International Centre as rapidly as possible and at least once a month. During the months when locusts are not reported in the country a negative report should however be sent. Reports or maps should be drawn up separately for each species of locust \*.

II. — The Governments of the States in which there is no entomological or agricultural Service able to collect the documentation relating to locusts shall give the necessary instructions to their local officials in order that they may report all locust activities. Such information shall be transmitted monthly and as rapidly as possible to the International Centre in London \*.

III. — Since at least 3 distinct species of locusts form swarms in Africa it is very important that special attention should be paid to their correct identification. To ensure this local reporters should be asked to send with their reports specimens of the locusts or at least of their wings. In cases in which the specimens cannot be identified locally they should be sent to the regional Centre or failing that to the International Centre.

IV. -- The Conference would ask that the highly important documentation now in the possession of the International Institute of Agriculture in Rome should be made accessible to the International Centre.

V. -- A certain amount of information concerning previous locust invasions being kept in the files of the local administrative offices, all States cooperating in the investigation are asked to allow the documents to be examined by competent persons and particularly by agents of the International Centre or of the regional or local Centres.

VI. — The International Centre for Anti-Locust Investigation will on the basis of the information received prepare quarterly reports on the locust situation in all the regions invaded. These reports will be distributed to all the States taking part in the investigation.

\* It is understood that the obligations of the different States resulting from the Convention and Agreement of Rome of 31 October 1920 remain whole and unchanged, more particularly that relating to the rapid reporting from State to State of swarms or hopper bands liable to pass the administrative frontiers.

Such reports will however be adequately complete and up-to-date only if the information is transmitted each month to the International Centre and as far as possible before the end of the month following that to which it refers.

VII. It is of extreme importance for all persons working on the locust problem to be acquainted with the work carried out in other States. The International Centre in London will be able to help in this matter by periodical publication of a list of the works and notes that have appeared relating to locusts. Such lists will be able to be complete only on condition that copies or reprints of all the published matter relating to locust control are sent without delay to the International Centre.

### (C) Research in the Field.

I. — The Conference emphasises the necessity for appointing in each State or group of territories entomologists for the special study of locust questions to be stationed in the infested zones and relieved of all other duties. Such appointments must be for periods of at least three years, for the observations relating to a given zone must extend over at least a whole year in order to give an accurate idea of the annual cycle and repetition of the studies over 2 or 3 seasons can alone lead to well-founded conclusions.

II. — The present state of knowledge does not allow of the Conference presenting a definite programme for investigation which must vary with the different zones. The following points may however be recommended to the attention of the local entomologists : —

- (a) Organisation of a regular system of information concerning locust activities.
- (b) Survey of the geographical, ecological and seasonal distribution of each species of locust and of their phases.
- (c) Studies in field laboratories of the life cycle and seasonal movements of locusts in relation with the seasonal cycle and with seasonal changes in vegetation.
- (d) Collection and critical study of all old reports of locust activities in the same State and in neighbouring States where there are not entomologists.

With regard to the last mentioned States, the Conference wishes to ask their Governments to give authorisation for the official entomologists to penetrate when necessary into their territories for purposes of locust enquiries.

III. — Taking into consideration the investigation already organised for the coming season in British, Egyptian and French territories in Africa, the Conference emphasises the urgent necessity for the appointment of entomologists for the following territories : —

Territory	Locust Species	Government
Rio de Oro - Ifni . . . . .	<i>Schistocerca</i>	Spain
Northern part of the French Sudan, of the French Niger, and the north of the Chad Territory . . . . .	<i>Schistocerca</i>	France
The middle Niger . . . . .	<i>Locusta</i>	France and Great Britain
North and north eastern regions on the shores of Lake Chad . . . . .	<i>Locusta</i>	France
Eritrea and Italian Somaliland . . . . .	<i>Schistocerca</i> and <i>Locusta</i>	Italy
Belgian Congo . . . . .	<i>Locusta</i> and <i>Nomadacris</i>	Belgium
Persia . . . . .	<i>Schistocerca</i>	Persia

Before entry of a foreign territory by the official entomologists a preliminary agreement will be established between the Centres for Locust Studies represented at the Conference: — London for Great Britain, Cairo for Egypt, Algiers for France and Portici for Italy.

IV. — The field entomologists will keep in close contact with their regional Centre and with the International Centre in London. The Centres will assist them with information about methods of work, about the situation in other territories, about recent publications and about identification of specimens sent to them.

## LEGISLATIVE AND ADMINISTRATIVE MEASURES

**Germany (1).** — By Decree of 29 October 1932 bearing on the Decree of 8 July 1932 [see this *Bulletin*, 1932, No. 11, p. 182] which purposes to prevent the introduction of the San José scale [*Aspidiotus perniciosus*] and the apple maggot [*Rhagoletis pomonella*], there have been added to the list of customs offices authorised to allow the entry of fresh fruits and fresh fruit waste submitted to phytosanitary inspection and coming from] Austria or Hungary, the following customs offices:—

Mittelwalde Bahnhof in Prussia and Simbach, Kufstein, München Grossmarkthalle and Salzburg in Bavaria.

\*\*\* By Decree of 9 November 1932, which came into force on 15 December 1932, with a view to preventing the introduction of diseases and pests of *Azalea indica* [= *Rhododendron indicum*], the importation of plants of this species attacked or suspected of being attacked by *Septoria Azaleae*, *Exobasidium Azaleae*, *Gracilaria azalecella* and *Acala schalleriana* is forbidden until further order.

Importation will however be allowed on condition that each consignment is accompanied by a certificate written in German and the language of the country of origin and issued by an expert of the Plant Protection Service of the country of origin, stating that the consignment has been inspected and found free from the diseases and pests specified above.

Transit under supervision by the customs authorities is allowed. (*Reichsgesetzblatt*, Teil I, Berlin, 17. November 1932, Nr. 75, S. 528).

**Germany (Brunswick) (1).** — The Law of 17 October 1932 confers on the Minister of the Interior the right to decree the necessary regulations for the control of agents injurious to the health of man and animals and of agents liable to damage the development of plants or the quality of plant products.

Offences will be punishable by fines not exceeding 150 RM or imprisonment for a period not exceeding six weeks.

(1) Communication from the Biologische Reichsanstalt für Land- und Forstwirtschaft, Berlin-Dahlem, official correspondent of the Institute.



**Germany (Hamburg) (1).** — By Decree of 7 October 1932 the obligatory clearing of thistles [*Carduus*] must be extended to all land including roads, waste land, banks, ditches, hedges and embankments.

The other provisions of this Decree correspond to those adopted by the Police Ordinance of 20 June 1931 [see this *Bulletin*, 1931, No. 10, p. 188].

**Germany (Province of Hanover) (1).** — By Decree of 10 October 1932 it is made obligatory in certain districts of the province of Hanover to apply control measures against 'Spargelfliege' [*Platypharea poeciloptera*] and asparagus rust [*Puccinia Asparagi*].

The regulations relating to the compulsory destruction each year of asparagus shoots are similar to those in force in Anhalt [see this *Bulletin*, 1932, No. 11, p. 182]. The operations must however be completed by 1st December of each year. Should asparagus rust make its appearance very early in the year it might be necessary to order an earlier date for the carrying out of the work.

The owner or holder of asparagus beds will be held responsible for the carrying out of the operations prescribed in this Decree.

**Germany (District of Münster) (1)** — By Decree of 16 August 1932 proclaimed by the President of the District of Münster, with a view to the control of poplar canker (*Nectria coccinea* var *sanguinella*) every landowner who shall find this disease on Canadian poplars on his land is required to report it within a week to the police, who will have the trees examined by experts.

If the examination shows that the poplars are really attacked by canker the police will order their immediate destruction.

Within certain localities specified in the present Decree it is forbidden to plant Canadian poplars.

**Germany (Prussia).** — By Decree No. 13808 of 10 November 1932 it is forbidden to keep living Colorado beetles (*Leptinotarsa decemlineata*) in any stage of the life history or to breed or trade in such beetles (purchase, sale, consignment, etc.).

Offences will be punishable by a fine not exceeding 150 RM or imprisonment. (*Preussische Gesetzsammlung*, Berlin, 25. November 1932, Nr. 63, S. 353).

**Western Australia.** — On 14 September 1932 (Agric. No. 2070/25; Ex. Co. No. 1570) the Director of Agriculture notified that Paterson's Curse (*Echium violaceum*) has been declared a noxious weed within the boundaries of the Victoria Plains District Road Board. (*Government Gazette of Western Australia*, Perth, 16 September 1932, No. 46, p. 1456).

(1) Communication from the Biologische Reichsanstalt für Land- und Forstwirtschaft, Berlin-Dahlem, official correspondent of the Institute.

\* \* On the 27 October 1932 the Director of Agriculture notified that *Watsonia* [see this *Bulletin*, 1932, No. 2, p. 26] has been declared a noxious weed within the boundaries of the Manjimup Road Board, Harvey Road Board and Balingup Road Board Districts. (*Government Gazette of Western Australia*, Perth, October 28, 1932, No. 54, p. 1648).

**Bulgaria.** — By a letter dated 13 December 1932 the Bulgarian Ministry of Agriculture and Estates has informed the International Institute of Agriculture that Bulgaria will shortly ratify the International Convention for Plant Protection of 16 April 1929 [see this *Bulletin*, 1929, No. 4, pp. 50-55].

**Canada (1).** — By Regulation No. 1 (Export) effective on and after October 22, 1932 the export of apples comprising all varieties of the fresh fruit, to any country other than the United States of America, is prohibited, unless the shipment intended for export is accompanied by a certificate of inspection issued and signed by an inspector duly appointed under the Destructive Insect and Pest Act.

It shall be illegal for any common carrier, steamship company, or any person to accept for export any such shipment unless the required certificate accompanies the shipping papers.

**Spain.** — By 'Orden' of 17 November 1932 has been formed an 'Instituto de Investigaciones Agronómicas' (Institute of Agricultural Research) grouping all the Centres of an experimental nature which now are under the 'Dirección general de Agricultura'. The Centres will according to their respective personnel and equipment extend their activities to research work.

The Institute will be divided into eight Sections, the first of which is that of Phytopathology. (*Gaceta de Madrid*, Madrid, 24 noviembre 1932, año CCLXXI, tomo IV, núm 329, págs. 1357 y 1358).

**France.** — By Ministerial Decree of 17 November 1932 an Inspector General of Agriculture has been made responsible for coordinating the branches of the Plant Protection Service (phytopathological research, permanent and voluntary crop protection, phytosanitary police). (*Journal Officiel de la République Française*, Paris, 20 novembre 1932, LXXIV<sup>ème</sup> année, n° 271, p. 12089).

\* \* By modification of the provisions of the Decree of 26 November 1930 [see this *Bulletin*, 1931, No. 2, p. 28] forbidding the entry into France of plants capable of introducing *Rhabdocline Pseudotsugae*, and of those of the Decrees of 18 April and 21 May 1932 [see this *Bulletin*, 1932, No. 5, p. 80, and No 3, p. 132] instituting measures concerning importation of plants and giving effect to article 3

(1) Communication from the Entomological Branch, Department of Agriculture, Ottawa, Canada, to the International Institute of Agriculture.

of the above mentioned Decree of 26 November 1930, the importation of cut stems of conifers (Christmas trees) free from soil was authorised during the period from 1 to 25 December 1932. (*Ibid.*, Paris, 27 novembre 1932, n° 277, p. 12355).

**Italy (1).** — By Ministerial Decree of 4 August 1932, which took effect from 1 September 1932, two new Royal Phytopathological Observatories (RR. Osservatorii di Fitopatologia) have been formed in addition to those already in existence, having their respective headquarters at Bolzano and San Remo.

The districts to be served by the new observatories are defined as follows :

Royal Phytopathological Observatory of Bolzano : provinces of Bolzano and Trento

Royal Phytopathological Observatory of San Remo : provinces of Imperia and Savona

From the same date the Royal Phytopathological Observatories of the Venezia Tridentina and Chiavari ceased including within their jurisdiction the provinces of Bolzano, Trento, Imperia and Savona

**\*\*** By Ministerial Decree of 15 November 1932 shooting and snaring of birds by any means and at any time are forbidden until further order in the island of Capri (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 22 novembre 1932, anno 73°, n. 269, pp. 5243-5244)

**Netherlands (The).** — By a letter dated 25 November 1932 the Minister of National Economy and Labour has communicated to the International Institute of Agriculture, in conformity with article 11 of the International Convention for Plant Protection signed at Rome 16 April 1929 [see this *Bulletin*, 1929, No. 4, pp. 50-55], the list of plant diseases and pests against which the Netherlands desire more particularly to be protected and which should be entered on the health certificates.

The list in question, which was published in the Netherlands official gazette (*Nederlandsche Staatscourant*) of 10 November 1932, consists of :-

- (1) potato wart disease (*Chrysophlyctis endobiotica* [*Synchytrium endobioticum*]).
- (2) cherry fruit fly (*Rhagoletis cerasi*)
- (3) Colorado beetle (*Leptinotarsa decemlineata*)

**Dominican Republic.** — In consequence of the disease of cacao known as 'escoba de bruja' (*Marasmius perniciosus*) occurring in Ecuador, Surinam, Trinidad and probably in other countries, by Presidential Decree No. 343 of 4 February 1932 the introduction of living plants, parts of plants, seeds and pods of cacao coming from any of these countries is forbidden.

(1) Communication from the Ministry of Agriculture and Forests to the International Institute of Agriculture.

The Ministry of Agriculture and Commerce will issue no permit for importation of botanic material, nor seeds or pods or living plants of cacao coming from countries other than those mentioned unless there is certainty that the disease in question does not occur in the country of provenance. (*Revista de Agricultura y Comercio*, Órgano Oficial del Departamento de Agricultura y Comercio, Santo Domingo, Rep. Dominicana, Febrero de 1932, vol. XXIII, núm. 29, pág. 375).

\*. In view of the serious danger that the 'piogan' (sweet potato weevil, *Cylas formicarius*) may be for the sweet potato [*Ipomoea Batatas*] crops and in consequence of the presence of breeding centres of the insect in certain places in the provinces of Monte Cristy, Puerto Plata, Santiago, Moca, La Veya y Duarte, in order to prevent as far as possible its introduction into the eastern and southern provinces, by Presidential Decree No. 479 of 30 June 1932 it is forbidden for farmers of the communes and divisions of the provinces of Seybo, San Pedro de Macoris, Santo Domingo, Azua and Barahona to utilise plants, parts of plants or tubers of sweet potato as seed if they come from any place in the region of Cibao. Similarly it is forbidden for any owner or driver of trucks, lorries or vessels, or any other person, to transport plants, parts of plants or tubers of sweet potato from any locality in the region of Cibao to places or communes of the provinces named.

It is also forbidden to utilise the aerial parts of sweet potato plants as fodder for animals in transport from or to the places named above. Transportation of sweet potatoes for food coming from the infested zone and addressed to the city of Santo Domingo will be allowed only if the potatoes are found by the inspector or inspectors appointed by the Ministry of Agriculture and Commerce to be free from the pest. The Ministry of Agriculture and Commerce will issue the necessary regulations to give effect to the present Decree and will organise a Service of inspection in places where it is considered necessary. This Service will issue free of charge certificates of health or of destruction in cases in which the latter has been decided on and carried out. Any quantity of plants or parts of plants or tubers of sweet potato which is found on inspection to be infested with eggs, larvae or adults of the 'piogan' must be burnt by the officials appointed by the Ministry of Agriculture and Commerce in accordance with the Ministry's instructions.

Any infringement of the present Decree will be punishable by a fine of from 6 to 100 American gold pesos or by imprisonment for from 5 to 100 days. (*Ibid.*, Julio de 1932, núm. 34, pág. 539).

\*. In view of the fact that the Mediterranean fruit fly (*Ceratitis capitata*) does not exist in Florida, United States of America, by Presidential Decree No. 497 of 19 July 1932 the Decree No. 1108 of 26 April 1929 has been annulled, consequently importation of seeds, fruits and vegetables in general, coming from Florida, is allowed. (*Ibid.*, Agosto de 1932, núm. 35, pág. 577).

**Tunis (Regency of).** — A Decree of the Director General of Agriculture, Commerce and Land Settlement, dated 26 July 1932, provides that by modification of the regulations of the Decree of 11 July 1932 [see this *Bulletin*, 1932, No. 12, pp. 208-210] until further order importation without a certificate of phytosanitary inspection is allowed for the following plant products or plant parts :— (1) seeds of all kinds excepting berseem [*Trifolium alexandrinum*]; (2) fresh and forced fruits with the exception of those originating in or coming from the following countries in which the presence of the San José scale has been proved :— South Africa, Argentina, Australia, Canada, Chile, China, United States of America, Hawaii, Japan, Mexico, New Zealand ; (3) fresh vegetables not forbidden under the legislation relating to grape phylloxera [*Phylloxera vastatrix*]; (4) cut flowers.

By a further Decree of the same date the list of plant and animal parasites considered dangerous to crops and to which are applicable the measures contained in the Decree of 11 July 1932 is as follows:—

#### I. — Plant parasites

*Bacillus amylovorus* (fruit trees); *Cuscuta aegyptiaca* (ber-seem); *Deuterophoma tracheiphila* (citrus trees); *Endothia parasitica* (chestnut); *Pseudomonas Citri* (citrus trees); *Synchytrium endobioticum* (potato).

#### II. — Animal parasites.

*Aleyrodes citri* (citrus trees); *Anthonomus grandis* and *A. vestitus* (cotton); *Aspidiotus perniciosus* (citrus trees and other plants); *Ceroplastes sinensis* (citrus trees); *Chrysomphalus aonidum* and *C. dictyospermi* (citrus trees and other plants); *Diaspis pentagona* (mulberry); *Doryphora* (*Leptinotarsa*) *decemlineata* (potato); *Iridomyrmex humilis* (all crops); *Margarodes vitium* (vine); *Mytilaspis gloveri* (citrus trees); *Pectinophora gossypiella* (cotton); *Phthorimaea operculella* (potato); *Pseudococcus filamentosus* (citrus trees and vine). (*Bulletin de la Société d'Horticulture de Tunisie*, Tunis, 15 novembre 1932, 30<sup>e</sup> année, n° 292, p. 179-180).

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The writer has found no trace of recurrence of the disease on any of the trees thus treated.

Fully grown trees infected for two years or longer and which are badly diseased, are to be felled promptly with care to extract the roots and mixing quick lime with the soil in the hole; the bark is to be immediately removed from the branches and trunk and used at once for burning, the remainder is to be cut up and promptly used as fuel.]

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[Dealing with animal parasites of rice, agricultural products in storage, of coffee, tea, kapok and rubber plants, of citrus trees, banana, pepper, soya beans, of *Cassia siamea*, *Albizia* and the tamarind and with plant parasites of rice, of tea, vanilla, cinchona, coffee and rubber plants, of sugar cane and coconut palms in Southern Indochina]



COSTANTIN, J. La mosaïque de la canne à sucre (Enseignements découlant de sa récente histoire). *L'Agronomie Coloniale*, Paris, 1932, 21<sup>e</sup> année, n° 176, p. 41-51. Index bibliographique, p. 50-51.

COSTANTIN, J. Le secret de Java. *Comptes rendus hebdomadaires des séances de l'Académie des Sciences*, Paris, 1932, tome 195, n° 19, p. 741-744.

[Concerned with the 'Sereh' disease and the altitude cure for affected sugar canes].

COTTIER, W. Insect transmission of dry-rot (*Phoma lingam*) of swedes. *The New Zealand Journal of Agriculture*, Wellington, 1932, Vol. 45, No. 4, pp. 219-224, figs. 1-2. Literature cited, p. 224.

CUSCIANNA, NICOLÒ. Comparsa di cavallette nella Venezia Giulia. Cenni biografici ed ecologici: criteri e mezzi di lotta. *Nuovi Annali dell'Agricoltura*, Roma, 1932, anno XII, nn. 2-3, pp. 303-343, figg. 1-10. Opere e lavori consultati, p. 343.

[The more to be feared of the numerous species observed in the Venezia Giulia:—*Calliptamus italicus*, *Phasgonura viridissima*, *Decticus albifrons*].

DEL C[ASTIZO], J. Grave peligro para nuestra agricultura. La dorifera de la patata en Francia. *Agricultura*, Madrid, 1932, año IV, núm. 44, págs 496 y 497, figs. 1-4.

[*Leptinotarsa decemlineata*].

DE LÉPINÉY, J., et MIMÉUR, J.-M. Les parasites du *Myoporum* dans la région de Rabat. *Bulletin de la Société des Sciences Naturelles du Maroc*, Rabat, 1931, tome XI, nos 7-8, p. 137-140.

[*Heierodera radiciola*, *Pachydema anthracina*, *Oxycarenus lavaterae*, *Aphis gossypii*, *Aspidiotus hederæ*, *A. lataniae*, *Chrysomphalus dictyospermi*, *Coccus hesperidum*, *Ceroplastes sinensis*, *Pseudococcus citri*, *Ps. adonidum*, *Rhizococcus falciifer*, *Icerya purchasi* injurious to *Myoporum insulare*. *Ps. adonidum* is the more serious parasite].

DELLA BEFFA, G. Sopra alcuni Macrolepidotteri nocivi. *Bollettino del Laboratorio Sperimentale (Regio Osservatorio Regionale) di Fitopatologia*, Torino, 1932, anno 9, n. 6, pp. 86-92.

[*Crambus culmellus*, *Zophodia convolutella*, *Etiella zinckenella*, *Acrobasis zelleri*, *Hypsipigia costalis*, *Evergestis extimalis*, *Glyphodes unionalis*, *Pionea forficatus*, *Sylepta ruralis*, *Pandemis corylana*, *Tortrix bergmanniana*, *Argyroplote pruniana*, *Olethreutes salicella*, *Grapholitha nigricana*, *Gr. juncibrana*].

DEL LUNGO, ANGIOLO. Uccelli e selvicoltura. *L'Alpe*, Milano, 1932, anno XIX, n. 7-8, pp. 225-259, 7 figg.

[Concerning birds useful in the control of pests of forest trees].

DI CAIRANO, VITALE. L'invasione delle cavallette in Tripolitania nel 1932. *Rassegna Economica delle Colonie*, Roma, 1932, anno 20<sup>o</sup>, n. 9-10, pp. 977-1018, 29 figg., 1 carta.

[*Schistocerca gregaria*].

[DIRECCIÓN DE AGRONOMÍA]. La langosta. *Ministerio de Industrias. Dirección de Agronomía. Publicación Mensual*. Montevideo, 1932, año V, n.º 1-2, págs. 1 a 18, figs. 1-12, 2 diagrs.

[*Schistocerca paranensis*].

DOIDGE, G. M. A wilt disease of cucurbits. *Farming in South Africa*, Pretoria, 1932, Vol. VII, No. 79, pp. 299-300, 1 fig.

[*Fusarium javanicum* var. *Theobromae*].

DOVER, CEDRIC. A social spider as a pest of mango trees. *The Indian Forester*, Dehra Dun, U. P., India, 1932, Vol. LVIII, No. 11, pp. 615-616, pl. XXXIII.

[*Stegodyphus sarasinorum* on *Mangifera indica*].

DUMBLETON, L. J. Codling-moth investigations. *The New Zealand Journal of Science and Technology*, Wellington, N. Z., 1932, Vol. XIV, No. 2, pp. 114-117, graphs 1-2

[*Carpocapsa pomonella*].

DUMBLETON, L. J. The apple leaf-roller (*Tortrix postvittana* Walker). *The New Zealand Journal of Science and Technology*, Wellington, N. Z., 1932, Vol. XIV, No. 2, pp. 83-92, figs. 1-4. Bibliography, p. 92.

DU PASQUIER, R. Principales maladies parasitaires du théier et du caféier en Extrême-Orient. *Bulletin Economique de l'Indochine*, Hanoi, 1932, 35<sup>e</sup> année, p. 223 B-253 B, fig. 1-17, pl. I-V, références, p. 224 B, 232 B, 234 B, 238 B, 247 B, 250 B, 251 B, 253 B; p. 307 B-415 B, fig. 18-36, pl. VI-XI, références, p. 371 B, 372 B, 374 B, 377 B, 384 B, 386 B, 394 B, 397 B, 399 B, 402 B, 405 B, 415 B.

[*Xylotrechus quadripes*, a larva of *Cerambycidae*, *Xyleborus* spp., *Stephanoderes hampei*, *Holotricha* sp., *Lachnosterna* sp., *Euchlora viridis*, *Apogonia* spp., *Diapromorpha melanopus*, *Phylorus dilatatus*, *Xypomyces* spp., *Corigerus mandarinus*, *Asiycus chrysochlorus*, *Archines destructor*, *Andraca bipunctata*, *A. apodecta*, *Stauropus alternus*, *Heterusia* spp., *Clania* spp., *Pagodia (Eumeta) hekmeyeri*, *Amatissa* spp., *Acanthopsyche* spp., *Psyche assamica* (?), *Zeuzera coffeae*, *Thosea* spp., *Selora mtiens*, *Parasa lepida*, *Behppla lohor*, *Chalcozelis albiguttata*, *Orgyia* spp., *Nygmia* spp., *Agrotis* spp., *Arbela* spp., *Ptochoryctis simbleula*, *Comocritis pieria*, *Biston* spp., *Ectropis crepuscularia*, *Homona coffearia*, *Cacoecia micaceana*, *Adoxophyes privata*, *Laspeyresia leucostoma*, *Gracilaria theivora*, *Agriphora rhombata*].

FEYTAUD, J. Le pou de San José (*Aspidiotus perniciosus* Comst.). *Revue de Zoologie Agricole et Appliquée*, Bordeaux, 1932, 31<sup>e</sup> année, n° 3, p. 33-40, fig. 5-7; n° 4, p. 49-58; n° 6, p. 89-100. Bibliographie, p. 94.

FEYTAUD, J. Le pou de San José en Europe. *Revue de Zoologie Agricole et Appliquée*, Bordeaux, 1932, 31<sup>e</sup> année, n° 8, p. 121-123. Bibliographie, p. 23.

[*Aspidiotus perniciosus* in Hungary and Austria].

FEYTAUD, J. Un nouvel appât pour la destruction des courtilières. *Revue de Zoologie Agricole et Appliquée*, Bordeaux, 1932, 31<sup>e</sup> année, n° 7, p. 105-107.

[Bait poisoned with barium fluosilicate against *Gryllotalpa vulgaris*].

FUIMEK, LEOPOLD. Die neue Gefahr für den heimischen Obstbau (San-José-Schildlaus). *Die Landwirtschaft*, Wien 1932, Jahrg. 1932, Nr. 11, S. 257-260, Abb. 109-112; Nr. 12, S. 286-287

[*Aspidiotus perniciosus*]

GARCÍA MERCET, RICARDO. Los parásitos de los insectos perjudiciales. Primera edición. (Biblioteca Agrícola Salvat) Barcelona, Salvat Editores, S. A., 1932, VII + 151 págs., 39 figs. Bibliografía, págs. 149 a 151

[The same idea which in 1926 led Malenotti to write for the Italian public a manual on the useful insects for plants has now suggested to Mercet to publish the present volume on the parasites of insect pests.

Among Spanish entomologists Mercet is particularly well fitted to deal with this subject in view of his long experience

In a readable but scientific form the writer briefly describes the present knowledge of the action of parasites on plant pests, he deals with the possible utilisation of the useful insects in the control of insect pests and their breeding for the purpose. He describes more in detail the parasites of certain highly destructive plant pests such as *Lymantria dispar*, *Thaumetopoea pityocampa*, *Phthorimaea operculella*, *Pyrausta nubilalis*, *Sesamia nonagrioides*, *Chrysomphalus dictyospermi*, *Aulacaspis pentagona*, *Urosoma lanigerum*, *Ceratitus capitata*, *Dacus oleae*, etc.]

GARD, M. Dommages causés par les organes floraux caducs ou naturellement disséminés, pendant les printemps à état hygrométrique élevé et à pluies persistantes. *Revue de Pathologie Végétale et d'Entomologie Agricole*, Paris, 1932, tome XIX, fasc. 4, pp. 179-180

GENTNER, G. Schädigung der Keimwurzeln von Roggen und Weizen durch Fusariumbefall. *Praktische Blätter für Pflanzenbau und Pflanzenschutz*, Freising 1932, X. Jahrg., Heft 9/10, S. 219-222, 1 Abb.

GIGANTE, R. Risultati di un'esperienza sull'ereditarietà della maculatura interna dei tuberi di patata. *Bollettino della R. Stazione di Patologia Vegetale*, Roma, 1932, anno XII, n. ser., n. 3, pp. 275-277, figg. 1-2. Bibliografia, pp. 277.

[Virus disease]

GOFFART, H. Untersuchungen am Hafernematoden *Heterodera schachtii* Schm. unter besonderer Berücksichtigung der schleswig-holsteinischen Verhältnisse I. III. Beitrag zu Rassenstudien an *Heterodera schachtii* Schm. *Arbeiten aus der Biologischen Reichsanstalt für Land- und Forstwirtschaft, Berlin-Dahlem*, Berlin 1932, XX Bd., Heft 1, S. 1-26, Abb. 1-8. Schriftenverzeichnis, S. 26

GOIDÁNICH, GABRIELE. La verticilliosi dell' « *Acer campestre* » L. e alcuni altri casi di tracheomicosi in Italia. *Bollettino della R. Stazione di Patologia Vegetale*, Roma, 1932, anno XII, n. ser., n. 3, pp. 285-297, figg. 1-7.

[*Verticillium* sp. on *Acer campestre*, *A. platanoides*, *Calycanthus praecox*, *Euphorbia* sp., *Koeleria paniculata*, *Lonicera biflora*, *Fatsia japonica*, *Papaver Rhoeas*, *Phlox* sp. and *Prunus Armeniaca*; *Fusarium nivium* on watermelons; *Fusarium* sp. (?) on conifers, *Rhamnus alniifolia* and *Rhus succedanea*].

GREEN, F. MARY The infection of oranges by *Penicillium* *The Journal of Pomology and Horticultural Science*, London, 1932, Vol X, No 3, pp 184-215, figs 1-6 References, pp 212-215.

[*Penicillium italicum* and *P. digitatum*]

GREENE, HENRY P Some pest control problems of the Argentine fruit grower *Monthly Bulletin of the Department of Agriculture, State of California*, Sacramento, California, 1932, Vol XXI, Nos 4-5-6, pp 258-268, figs 1-5 Bibliography, p 268

[The contents include various lists of diseases and pests of citrus and other tree fruits in Argentina]

HANSEN, H. N., and SMITH, RALPH E The mechanism of variation in imperfect fungi *Botrytis cinerea* *Phytopathology*, Lancaster, Pa., 1932, Vol 22, No 12, pp 953-964, figs 1-4 Literature cited, p 964

HANSEN, HENNING P Forsøg paa aktiv Immunisering af Kaalroe *Brassica napus* mod *Rhizoctonia* *Nordisk Jordbrugsforskning*, København 1932, Hefte 5, sid 191-200 Litteratur, sid 200

[In Danish, with an English summary In this paper it is attempted to show, whether an active immunisation of swede-seedlings (*Brassica Napus*) against *Rhizoctonia* sp can be accomplished]

HASELHOFF EMIL Grundzuge der Rauchschadenkunde Anleitung zur Prüfung und Beurteilung der Einwirkung von Rauchabgasen auf Boden und Pflanzen Berlin, Verlag von Gebrüder Borntraeger, 1932, VII + 167 S., 7 Abb Verzeichnis des Schrifttums, S 158-161

HIMMISCH, OTTOKAR Der Bogenamarant (*Amarantus retroflexus* L.), ein wenig beachtetes Unkraut *Fortschritte der Landwirtschaft*, Leipzig 1932, 7 Jahrg., Heft 13, S 344-347, Abb 1-3 Literatur, S 347

HOUDAYER, C Traitements d'automne et d'hiver des arbres fruitiers *Le Progrès Agricole et Viticole*, Montpellier, 1932, 49<sup>e</sup> année, n<sup>o</sup> 49, p 540-544

HUBERT, KURT Beiträge zur Züchtung rostresistenter Weizen *Zeitschrift für Züchtung, Reihe A Pflanzenzüchtung*, Berlin 1932, Bd XVIII Heft 1, S 19-52 Literatur, S 51-52

[*Puccinia glumarum Triticci*, *P. triticea*]

HÜTTING, WERNER Die Grundlagen zur Immunitätszüchtung gegen Brandpilze (Ustilagineen) (Sammelreferat) *Der Züchter*, Berlin 1932, 4 Jahrg., Heft 9, S 209-219, Abb 1-27 Literaturverzeichnis, S 218-219

JACK, RUPERT W The lesser tobacco wireworms *Bulletin No 847*, Salisbury, 1932, 6 pp., 1 pl.

[*Trachynotus geniculatus*, etc.]

JANSSENS, PAUL E A Le coton en Afrique tropicale Bruxelles, Ateliers R Bau-sart, 1932, [III] + 406 p., 38 + LIX fig., 2 cartes Bibliographie, p 388-402

[The contents include:—Maladies du cotonnier (p 83-112, fig x-xviii)]

Insectes attaquant le cotonnier (p 112-145, fig 17-32, XIX-XXIII, 1 pl en coul.)]

JOHNSON, T., NEWTON, M., and BROWN, A M Hybridization of *Puccinia graminis tritici* with *Puccinia graminis secalis* and *Puccinia graminis agrostidis*. *Scientific Agriculture*, Ottawa, Canada, 1932, Vol XIII, No. 3, pp. 141-153, figs. 1-5 Literature cited, p 153

[With title and summary in French].

JOVINO, SAVERIO La ruggine nera del grano nel Mezzogiorno e mezzi di combatterla. *La Ruerca Scientifica*, Roma, 1932, anno III, vol. II, n 9-10, pp. 348-356

[*Puccinia graminis*].

KERVEGANT, P. Le caféier à la Martinique *Bulletin de l'Agence Générale des Colonies*, Paris, 1932, 25<sup>e</sup> année, n° 284, p 1653-1687, 4 fig Bibliographie, p 1687

[Deals *inter alia* very fully with the plant and animal parasites of this crop].

KOZŁOWSKY, S., et RUNGS, C Sur quelques insectes ennemis des plantes maraichères au Maroc *Bulletin de la Société des Sciences Naturelles du Maroc*, Rabat-Paris-Londres, 1932, tome XII, nos 1-3, p. 66-68

[*Scaptomiza flaveola*, *Phytomyza atricornis*, *Anthomyia* (*Chortophila*) *radicum*, *Pegomyia betae*, *P. winthemi*, *Spheroderma ocularium*, *Phthorimaea operculella*, *Phytometra orchalcea*, *Plutella maculipennis*, *Eriococcus cactearum*].

KREIS, HANS A Beitrage zur Kenntnis pflanzenparasitischer Nematoden *Zeitschrift fur Parasitenkunde*, Berlin 1932, 5 Bd, 1 Heft, S 184-194, 15 Abb Literatur, S 194

[German description of *Pristionchus longicaudatus* n gen. et n sp. on *Lactuca sativa*, and of *Rhabdus macrocheila* n sp. on *Solanum tuberosum*].

KUFFERATH, H., et GHESQUIÈRE, J La mosaïque du manioc *Annales de Gembloux*, Gembloux, 1932, 38<sup>e</sup> année, 11<sup>e</sup> livr, p 365.

LABROUSSE, F L'état sanitaire des plantes cultivées dans ses rapports avec leur nutrition. *Annales Agronomiques*, Paris, 1932, 2<sup>e</sup> année, n° 6, p 774-808 Bibliographie, p 795-808

LAIDLAW, W B B The enemies of the elm bark beetle (*Scolytus destructor*, Oliv.) *The Scottish Forestry Journal*, Edinburgh, 1932, Vol 46, Pt 2, pp 117-129, figs 1-6 References, p 129

[*Parasitylenchus scolyti*, *Aulonium trisulcatum*, *Hypophloeus bicolor*, *Thanasimus formicarius*, *Cryptophagus dentatus*, *Coeloides scolyticidae*, *Entedon leucogramma*, *Chelopachys colon* and an unidentified mite were observed in Great Britain as predators of *Scolytus destructor*].

LA NOTTE, F S Sul mancato accrescimento delle olive. *La Propaganda Agricola*, Bari, 1932, ser. II, anno XXIV, n 22, pp. 336-338, 1 fig.

[The phenomenon must be attributed to unfavourable weather conditions or secondarily to physiological disturbances in the plant itself].

LAROSE, EM., et VANDERWALLE, R. Les effets du froid sur quelques variétés de froment à haut rendement au cours de l'hiver 1931-1932. *Bulletin de l'Institut Agronomique et des Stations de Recherches de Gembloux*, Gembloux 1932, tome I, n° 3, p. 204-222, fig. 1-9.

[In French, with title and summary in Flemish, German and English].

LE GOUPIL, Les propriétés insecticides du bromure de méthyle. *Revue de Pathologie Végétale et d'Entomologie Agricole*, Paris, 1932, tome XIX, fasc 4, p. 169-172.

LIESE, J. Zur Biologie der Douglasiennadelschütte. *Zeitschrift für Forst- und Jagdwesen*, Berlin 1932, LXIV. Jahrg., 11. Heft, S. 680-693, Abb. 1-4.  
[*Rhabdochne Pseudotsugae*].

LOEWEL, E. L. Schwefelkalk-Bleiarсениат oder Kupfermittel zur Bekämpfung des Fusicladiums? *Der Obst- und Gemusebau*, Berlin 1932, 78. Jahrg., Heft 11, S. 175-176

[*Fusicladium*].

LUNDEGÅRDH, HENRIK Die Nährstoffaufnahme der Pflanze. Jena, Verlag von Gustav Fischer, 1932, VIII + 374 S., 79 Abb., 5 Taf.

[The contents include:— Kapitel 8 Die Dörrfleckenkrankheit und ähnliche nichparasitäre Krankheiten des Hafers ihre Ursachen und die Mittel zu ihrer Bekämpfung.

1. Die Kalimangelkrankheit

2. Die Dörrfleckenkrankheit, ihre Verbreitung und Ursachen (S. 271-311, Fig. 76-77, Taf. IV-V)]

MAHNER, ARTUR Zum Begriff « Krebsfestigkeit von Kartoffelsorten » *Landwirtschaftliche Fachpresse für die Tschechoslowakei*, Tetschen 1932, 10. Jahrg., Nr. 13, S. 275-276

[*Synchytrium endobioticum*].

MALINOTTI, ETTORE Precisazioni Magnesite e grilloalpe *Giornale di Agricoltura della Domenica*, Roma, 1932, anno XLII, n. 48, p. 565, figg. 1-2

[The tests carried out by the R. Osservatorio di Fitopatologia, of Verona show definitely that the use of magnesite (magnesium carbonate) cannot be recommended, at least at the rate of 6 quintals per ha, for control of *Grilloalpe vulgaris*].

MALLAMAIRE, A. Sur une maladie du caféier à la Côte d'Ivoire *L'Agronomie Coloniale*, Paris, 1932, 21<sup>e</sup> année, n° 174, p. 193-197

[*Fomes lignosus*? on *Coffea arabica*].

MARCHAL, ÉM. Recherches et observations effectuées à la Station de Phytopathologie de l'État pendant la période 1927-1931 *Bulletin de l'Institut Agronomique et des Stations de Recherches de Gembloux*, Gembloux, 1932, tome I, n° 3, p. 164-174.

[In French, with title and summary in Flemish, German and English. Specially noteworthy as new for Belgium is the record of *Bacterium transluens* var *undulosum* on wheat and *Synchytrium endobioticum* on potato]

MARCHAL, PAUL. Les sciences biologiques et leurs rapports avec l'Entomologie. *Revue générale des Sciences pures et appliquées*, Paris, 1932, tome XLIII, n° 23, pp. 670-675

MATHIEU, G. Dégâts de larves de taupins sur tomates. Moyen cultural de lutte. *Revue de Pathologie Végétale et d'Entomologie Agricole*, Paris, 1932, tome XIX, fasc. 4, pp. 172-173, pl. VI.  
[*Elateridae*].

MAZÉ, P., et MAZÉ, P.-J. Influence des fumures organiques sur l'infection du maïs par l'*Ustilago maydis* *Comptes rendus des séances de la Société de Biologie et de ses filiales et associées*, Paris, 1932, tome CXI, n° 39, pp. 835-837.

MAZÉ, P., et MAZÉ, P.-J. Sur l'évolution du charbon (*Ustilago maydis*) sur nos cultures de maïs en 1932. *Comptes rendus des séances de la Société de Biologie et de ses filiales et associées*, Paris, 1932, tome CXI, n° 38, pp. 559-561.

MAZZANTI, TEODOSIO A proposito della moria degli olmi. *L'Italia Vinicola ed Agraria*, Casalmonferrato, 1932, anno XXII, n. 49, p. 767.  
[*Cellis australis* to replace elms attacked by *Graphium Ulmi*]

MCATEE, W. L. The need for studies in bird control in California. *Monthly Bulletin of the Department of Agriculture, State of California*, Sacramento, California, 1932, Vol. XXI, Nos 4-5-6, pp 269-286, figs 1-8

MCKINLEY, FARI, B. A concept of the ultramicroscopic virus diseases and a classification *Science*, Lancaster, Pa, 1932 New Series, Vol 76, No 1977, pp 449-454.

MCRAB, W. Effect of mosaic on the tonnage and the juice of sugarcane in Pusa, Part II. *The Indian Journal of Agricultural Science*, Calcutta, 1932, Vol. II, Pt IV, pp. 378-384.

## NOTES

**New Official Correspondents of the Bulletin.** — The following have been appointed by their respective Governments as official correspondents of the International Institute of Agriculture for questions relating to plant protection :— A. MALLAMAIRE, Ingénieur d'Agronomie Coloniale, Directeur du Laboratoire de Phytopathologie de la région équatoriale de l'Afrique Occidentale Française, 1<sup>re</sup> Mé par Bingerville, Ivory Coast; Maung Thet SU, B. Ag., Mycologist, Department of Agriculture, Agricultural College, Mandalay, Burma, British India; Philippe KIAT, Ingénieur, Chef du Service Agricole de la République Libanaise, Beyrouth; Francesco DESSY, Dottore, Direttore dell'Agricoltura e delle Foreste, R. Governo delle Isole Italiane dell'Egeo, Rodi, Aegæan Islands.

# INTERNATIONAL BULLETIN OF PLANT PROTECTION

## DISCOVERIES AND CURRENT EVENTS \*

### French North Africa : Desert Locust (*Schistocerca gregaria*) (1)

#### ALGERIA.

- 3 December 1932 — A large swarm over Colomb-Béchar at 3 p. m. flying N. E.  
 4       "       "       — A small red swarm passed over Beni-Abbès flying E.  
                   A swarm of medium density coming from the N. N. W.  
                   passed over Tabelbala flying N. E.  
 5       "       "       — A dense pink swarm, of 10 × 5 km, coming from the  
                   S. settled at Béchar (Colomb-Béchar).  
                   A large swarm coming from the N. W. settled at Igli  
                   (Colomb-Béchar)  
 7       "       "       — A sparse red swarm coming from the S. W. passed over  
                   Beni-Ounif at 1 p. m. flying N. E.  
 10       "       "       — A large red swarm coming from the S. E. settled at 2 p. m.  
                   at Adrar.  
 11       "       "       — A small swarm coming from the W. settled 15 km W.  
                   of Arbaouat (Géryville) and departed towards the N  
 12       "       "       — A large red swarm coming from the S settled at Deldoul  
                   Barka Charovin (60 km S. S. W. of Timimoun)  
 13       "       "       — A small swarm coming from the W settled 80 km from  
                   El Abiod (Géryville) and flew E.  
 15       "       "       — A large swarm coming from the W. settled 130 km S.  
                   of Géryville and departed towards the E.  
 22       "       "       — A red swarm settled over the region W. of Meridja (Co-  
                   lomb-Béchar) at 9 a. m.

#### MOROCCO.

- 23-24 November 1932 — A large swarm settled on the 'tribu' of the Is Brahim  
                   (50 km E. of Tizuit). Departed on the 25 flying E.  
 30       "       "       — A very large red swarm passed 18 km E. of Cap Ghir  
                   at about 3 p. m. flying S. E.

\* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from the Government General of Algeria (Direction des Services Economiques)  
 to the International Institute of Agriculture.



- 1 December 1932 — A red swarm reported by the circle of Erfoud 20 km S. of Taouz.
- 2     "     " — A red swarm passed 45 km E. N. E. of Taroudant flying N. E.  
           A swarm of 3 sq. km settled during the night on the Aouchouz 165 km E. of Cap Ghir. Departed on the 3rd flying E.
- 3     "     " — Some pink adults collected where the road from Port Lyautey branches to Tangiers and Petit Jean.
- 5     "     " — A swarm of 2 sq. km passed over Ksar es Souk flying N.  
           A red swarm of 2 km  $\times$  500 m passed over Bou Denib at 1 p. m. flying N.  
           A small red swarm passed over Igherm at about 1 p. m., driven N. by a southerly wind.  
           A large swarm coming from the S. settled 100 km S. W. of Erfoud.
- 6     "     " — A swarm passed Tafilalet flying N E.  
           A red swarm coming from the S. settled at Bou Anane. Departed on the 7th flying N  
           A very large red swarm coming from the N. E. passed Tale Kjount, 130 km E. of Cap Ghir, flying S. W.  
           A swarm coming from the S settled at Assaghar (180 km E. of Agadir) and flew S. E.
- 7     "     " — A red swarm coming from the S. settled 15 km S. W. of Bou Anane.  
           A large red swarm coming from the S. settled on the palm plantation of Akka. Departed on the 8th at 5 p. m. flying N.  
           A large red swarm passed at about midday 140 km E. of Cap Ghir (Circle of Taroudant) flying S. E.  
           A red swarm coming from the S.-W. settled at Bou Anane and Ouled Abbès. Flew N. E. on the 8th.
- 8     "     " — A large swarm passed over Bou Malem flying S. W.
- 11    "     " — A swarm of 13  $\times$  3 km coming from the W. settled at Anizmiz. Departed in the afternoon towards the N. E.
- 17    "     " — A small swarm coming from the S. E. turned above Igherm and flew S. with a northerly wind.
- 19    "     " — A swarm of 10  $\times$  3 km settled near Tassoultant Aghouatin (9 km S. S. E. of Marrakech).
- 19-20   "     " -- Numbers of swarms settled between Kerrando and Aoufous and Aoufous and Bou-Denib.
- 21-22   "     "
- 20    "     " — A red swarm of 4  $\times$  3 km coming from the S. E. settled at Ouled Brahim (20 km W. of Taroudant). Departed on the 21st flying N. E.  
           A swarm coming from the Haouharas settled at about 5 p. m. at El Mouih at Tirkou.

- 22 December 1932 — A red swarm of  $10 \times 15$  km coming from the E. settled on the country of the Tazentant. Departed on 23rd and settled again at Tanit where it spent the night of the 23-24th.  
A small swarm coming from the N. E. passed over Gourrama.
- 23       "       " — A swarm of 6 km following the valley of the Oued Zat passed over Aït Ourir and flew in the direction of Marrakech.
- 24       "       " — A swarm of 6 km coming from Tamazouzt by the valley of the Oued Zat passed at 1 p. m. at Aït Ourir flying towards Aït Zaid.  
A red swarm of  $4 \times 2$  km coming from the N W. passed over the Montaga (40 km E. of Taroudant) flying S.
- 25       "       " --- A swarm of 4 km circled over Aït Ourir at 3 a.m. and flew E. following the Oued Zat.
- 26       "       " - A red swarm of  $2 \times 1$  km coming from the N. W. settled near Demnat and soon departed.  
A small swarm coming from the E. settled at Douar Huegui, region of Marrakech. Departed on the morning of the 29th flying towards Sidi Rahal.  
A very dense swarm of  $700 \times 800$  m passed over Douar Iznaguen (E. of Taroudant) flying N.
- 27       "       " - A red swarm of  $2 \times 4$  km coming from the N. settled E. of Marrakech. Flew away on the morning of the 28th towards the N.  
A swarm coming from Ida ou Tanan settled near Boumeït, region of Mogador.

**French West Africa: Tropical Migratory Locust (*Locusta migratoria migratorioides*) in Dahomey (1).**

- 29 October 1932 A swarm coming from the S. W. (Bopa region) settled at Allada Departed on 31st flying S. E., region of Abomey Calavi.
- 3 November " A swarm coming from the E settled in the subdivision of Sakété, circle of Porto Novo. Departed on the morning of the 4th, flying W.
- 7       "       " -- A swarm coming from the N. (Tanguiéta) passed Boukombé (circle of Atacera) flying S. E. (Djougou and Sodoké).

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

**Egypt : Desert Locust (1).**

No swarms of the desert locust appeared in the country during November, 1932.

Few *Schistocerca gregaria* ph. *flaviventris* were found scattered in some valleys of the Arabian desert, others were discovered in the Oases of Kharga and Dakhla in the South Western desert. Most probably they were the remnants of swarms which invaded the country in previous years. They were so few that no control was necessary.

A scheme for scouting other parts of the desert was laid down with the object of finding out whether any breeding took place.

**Eritrea : Tropical Migratory Locust (*Locusta migratoria migratorioides*) (2).**

During November 1932 very few locusts were reported in the Colony.

In the western plain adults of unspecified colour passed over Tzellimá on 5 November. The same day a very dense swarm of dark coloured locusts coming from Mai Ambesa passed over Boscioca ; other locusts settled in the Badouma plain and copulation occurred.

On the high plateau a dense swarm of young locusts followed by numbers of storks passed over Az Teclesan and Sciouma Negus Tahtai on the 13th, flying towards the eastern plain. Numerous hopper bands of *Locusta migratoria migratorioides* appeared towards the middle of the month in the territory of Acchélé Guzai and were rapidly destroyed by means of flame-throwers of the Egyptian type.

In the eastern plain a single swarm of *L. migratoria migratorioides* was reported on 18 November coming from Mai Tzellim and flying towards Mended.

Amongst the specimens of *Locusta* taken were observed a number belonging to the solitary phase.

During November 1932 no damage was caused to crops.

No swarm of *L. migratoria migratorioides* was reported in the Colony during December 1932

**United States of America: A Survey of Apple Rust in 1932 (3).**

The importance of *Gymnosporangium germinale* as a cause of a disease of apples has only been realized since about 1927. Previous to that time all the injuries to apples recognized as due to a cedar rust were attributed to *Gymnosporangium juniperi-virginianae*. It is now known that *G. germinale* causes a

(1) Communication from the Chief Plant Pathologist, Plant Protection Section, Ministry of Agriculture, Giza, Egypt to the International Institute of Agriculture.

(2) Communication from the official correspondent of the Institute, Dr. Rolando GUIDOTTI, Chief of the Agricultural Bureau of Eritrea, transmitted by the Government of the Colony.

(3) Communication from the official correspondent of the Institute, Dr. Neil E. STEVENS, Senior Pathologist, Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington.

definite injury to apple fruits, symptomatically quite different from that caused by *G. juniperi-virginianae*, and even more damaging to the fruits affected.

Varieties known to be susceptible to these two species are indicated below :

*G. juniperi-virginianae*

Rome  
Wealthy  
York  
Jonathan  
Ben Davis  
McIntosh

*G. germinale*

Winesap  
Delicious  
Arkansas Black  
Stayman  
Yellow Transparent  
Rome

In an endeavor to determine the relative abundance of these two rusts in an important apple producing area, a survey was conducted by P. R. Miller and L. R. Fate, in Pennsylvania, West Virginia, Virginia, North Carolina, and Georgia, July 1932. The results of this survey clearly show that the direct injury to apple fruits by *G. germinale* is at least equal to that caused by *G. juniperi-virginianae*. As high as 10 per cent, infection with *G. germinale* was found in a well cared for commercial orchard in Virginia. *G. juniperi-virginianae* was found practically throughout the region surveyed while *G. germinale* had a more restricted distribution, being found in Maryland, West Virginia, and Virginia.

It should be remembered that *G. germinale* causes injury only to the apple fruits while *G. juniperi-virginianae* injures both fruits and leaves.

### Rumania: Black Rust of Cereals in 1932 and the Measures Taken to Prevent Future Outbreaks (1).

Wild and cultivated plants in Rumania were afflicted with a number of adversities in 1932 ; the worst damage being undoubtedly due to black rust of cereals (*Puccinia graminis*). This rust has not been of so much importance or so widespread within the memory of the oldest farmers. The most serious losses, amounting to 50 % of the probable crop, were in the valley of the Danube, particularly in the districts of Dolj, Romanați, Jalomița and Brăila, and in certain regions of Banat and Bessarabia. In places the losses reached 70-80 % of the crop, in others, such as Northern Moldavia and Northern Bessarabia, 10 % at most ; in the Caliacra and Durostor districts and in Northern Transylvania 5 %. Not all the wheat losses in 1932 were due to rust : only 50 % can be attributed to rust, the rest being the result of physiological causes.

The autumn of 1931 was characterised by a drought which retarded the germination and growth of the wheat ; during the following winter there were heavy falls of snow in February and March and the melting of the snow produced large quantities of water which lay stagnant in the fields asphyxiating

(1) Communication from the official correspondent of the Institute, Dr. Tr. SĂVULESCU, Chief of the Phytopathological Section of the Agricultural Research Institute of Rumania, Bucharest.

20-40 % of the wheat seedlings. Consequently the wheat growth was thin and the plants were weak and susceptible to all kinds of infection. The spring was cold and wet and still further retarded the growth of crops and increased the liability to disease. Weather conditions returned to normal only after 15 May. As a result of the bad weather the wheat escaped brown rust of wheat (*P. triticea*) in May: the first pustules being observed on 16, 17 and 18 June. The second half of June was wet and the rain and violent south winds favoured an outbreak and the spread of black rust. The native species, *P. triticea*, appeared very late and in small amount: its losses being insignificant. The yellow rust of wheat and other cereals (*P. glumarum*) however and more especially *P. graminis* found their development favoured by the exceptional conditions and attacked particularly the late wheats and those of which the growth was retarded by late sowing or bad weather. The wheat crops in low-lying land where the water was standing longest, in the land flooded by the Danube and along other water-courses were also very badly infected. High-yielding wheats suffered more than low-yielding, spring wheats more than autumn, long-strawed wheats more than short-strawed, wide-leaved more than narrow-leaved, yellow-strawed more than red-strawed, barless more than barbed and wheats spaced at 15 cm between the rows more than those spaced at 10 cm. As is always the case in Rumania the early wheats were the most resistant to rust: those which reached maturity before 20-25 June escaped black rust and were little attacked by the brown and yellow rusts.

Cultivation of early varieties is the first measure recommended to growers for escaping the ravages of the black and yellow rusts. The Phytopathological Section of the Agricultural Research Institute of Rumania has moreover been studying during the last 4 years by the method of recording by coefficients, the rust resistance of the different varieties grown in the country. The resistance is determined in different localities and for each rust, more especially the physiological strains 13 and 20 of the brown rust which are the most widely spread in Rumania. For each region we are able to recommend the most resistant varieties. Thus, in the Danube plain the strains 'American 15' and 'American 26' selected by Professor G. Ionescu-Sisești at the Agricultural Research Institute have been found resistant to brown rust. The following have been classed as semi-resistant in general and resistant in certain years:— 'Sandu-Aldea 22', 'Tigănești 714', 'Sandu-Aldea 70', 'Sandu-Aldea 120', 'Sămânța 117'. The following have been found susceptible:— 'Sandu-Aldea 224', 'Odvoș 3', 'Filipescu'. This classification is valid only for the Danube plain. In Banat and Southern Transylvania the varieties 'Sămânța 117', 'Bankut 1.201' and 'Odvoș 241' are the most resistant, being even better than 'American 15' and 'American 26'. In Northern Transylvania 'Bankut 1.201' and more particularly 'Odvoș 241' are classed as the most resistant. In Northern Moldavia and the steppes of Bălți and Hotin the wheat number 11 selected at the Laza farm is the best as regards yield and resistance to rust. In Dobruja the wheats 'Urias cu pana roșie' and 'Sămânța 117' are the most resistant. But though the control of the black and yellow rusts may be achieved more or less satisfactorily by growing early varieties, that of brown rust can be effected

only by developing resistant varieties for each region and for each physiological strain of this rust.

It is recommended also to destroy weeds and plough or, better still, burn the stubble after the harvest.

As the black rust has been excessively abundant in 1932 in Rumania and as laboratory tests have shown the presence of 4 teleutospores in 1 sq. cm. of soil taken from a field near Bucharest, which means 400 million teleutospores per ha, a campaign to exterminate the barberry (*Berberis vulgaris*) has been recommended.

*P. graminis* in the uredospore form is not able to withstand the winter in Rumania and the complete cycle of development of the fungus cannot take place in the country without the intermediary stage on the barberry. The barberry grows wild in Rumania in the plain and the hills, until the mountain area. It is also cultivated in gardens, parks and cemeteries as an ornamental plant.

We recommend (1) rooting up and destroying on the spot all barberry bushes, not leaving roots in the ground which may give rise to new shoots, and destroying also the seeds; (2) if the bushes are large the Thompson process is advisable, which consists in pouring 9 to 10 litres of sodium arsenite over the ground near the roots; for this purpose 4.5 to 5 litres of sodium arsenite are mixed with 180 or 200 litres of water and some substance added which will prevent animals being attracted by the sweetish taste of the poison; (3) barberry bushes can be destroyed by placing 5 to 6 kg of common salt near the roots.

It is still too soon to discuss the practical results of this campaign against the barberry.

## LEGISLATIVE AND ADMINISTRATIVE MEASURES

**Western Australia.** — On 7 December 1932 (Agric No 2070/25; Ex. Co. No. 2109) the Director of Agriculture notified that Cape Tuhp (*Homeria collina*) had been declared a noxious weed within the boundaries of the Moora Road Board District. (*Government Gazette of Western Australia*, Perth, 9 December 1932, No. 61, p. 1838).

**Bulgaria.** — By Law No. 43 of 4 July 1932 Art. 94 of the Law of 24 December 1928, concerning the improvement of agricultural production and management of agricultural property, has been amended.

Amongst other things all substances, preparations and chemical products intended for use in the control of plant diseases and pests are exempted from taxes, duties and charges of all sorts. Importation of such products will be under the control of the Ministry of Agriculture which will ensure that the favoured products are used solely for agricultural purposes. (*Deutsches Handels-Archiv*, Berlin 1932, 86. Jahrg., 1. Novemberheft, S. 2232).

**Egypt.** — By a Decree of 30 August 1932 have been annulled the Decrees of 26 August 1916, 29 July 1922, 12 November 1927, 9 June 1928, 19 June and 3 August 1930 containing measures for the protection of plants from diseases coming from abroad.

To paragraph (1) of Article 2 of Law No. 1 of 4 January 1916, specifying the living plants which may not be imported unless with authorisation from the Minister of Agriculture, has been added the following:—

(a) plants, parts of plants and fruits belonging to the families *Rosaceae*, *Rutaceae*, *Vitaceae* and *Solanaceae*;

(b) plants, parts of plants and fruits of the fig;

(c) fruits of Japanese persimmon;

(d) onions;

(e) all plants in pots or having the roots surrounded with soil or sand.

*Pseudococcus* sp. is regarded as injurious to fruits. Any imported fruits which are attacked by this insect must be fumigated. (*Journal Officiel du Gouvernement Egyptien*, Le Caire, 3 septembre 1932, 59<sup>me</sup> année, n° 77, p. 5).

**Italy.** — By Ministerial Decree of 15 July 1932 shooting and snaring of the following insectivorous birds is absolutely prohibited until 31 August 1933:— green woodpecker [*Gecinus viridis*], spotted woodpeckers [*Dendrocopus major*, *D. medius*, *D. minor*], black woodpecker [*Picus martius*], tits [*Parus* spp.], chiffchaff and its relatives [*Phylloscopus* spp.], long-tailed tit [*Aegithalus*], penduline titmouse [*Remizus pendulinus*], goldcrest [*Regulus cristatus*], firecrest [*R. ignicapillus*], wren [*Anorthura troglodytes*]

By Ministerial Decree of 16 December 1932 have been added to the above list the European redbreast [*Erythacus rubecola*] and the nightingale [*Luscinia megarhyncha*]. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 20 luglio 1932, anno 73°, n. 166, pp. 3428-3429; 24 dicembre 1932, n. 296, pp. 5742-5743).

\*\*\* The Ministerial Decree of 20 November 1932 modifying the special technical regulations for the exportation of citrus fruits stipulates *inter alia* that exportation of fruits damaged by frost or severely infected with sooty mould is forbidden. Among the qualities required of first and second grade fruit is that it must be commercially considered free from scale insects. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 3 dicembre 1932, anno 73°, n. 279, pp. 5428-5437, 43 figg.).

\*\*\* By Ministerial Decrees of 21, 22 and 31 December 1932 and of 19, 21 and 23 January 1933 obligatory Consortiums (Syndicates) of olive growers have been formed in the provinces of Pisa, Sassari, Naples, Genoa, Reggio di Calabria, Foggia and Viterbo. Amongst the purposes of these Syndicates is to carry out control measures against olive pests and diseases (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 31 dicembre 1932, anno 73°, n. 302, pp. 5813-5814; 20 gennaio 1933, anno 74°, n. 16, pp. 252-253; 27 gennaio 1933, n. 22, p. 349; 1° febbraio 1933, n. 26, p. 429; 4 febbraio 1933, n. 29, p. 478).

**Latvia (1).** — The Ministry of Agriculture has added to the regulations of 25 April 1932 [see this *Bulletin*, 1932, No. 10, p. 168] relating to the control of preparations against plant diseases and pests a list specifying the charges for such control. The charges will be reduced by 25 % for products manufactured in Latvia.

**Mexico.** — By 'acuerdo' of the 'Secretaría de Agricultura y Fomento' dated 28 October 1932, the internal quarantine order ('Cuarentena Interior') No. 1 for the control of the pink bollworm (*Pectinophora gossypiella*) has been revised in order to be more effective in combatting this pest, which has been found in various places in the 'Municipios' of Villa Ahumada, Carrizal and San Buenaventura, State of Chihuahua and near the zone of the Juarez Valley. (*Diario Oficial*, México, 15 de noviembre de 1932, tomo LXXV, núm. 13, pág. 6).

**Netherlands (The).** — By a Law dated 7 July 1932 aiming at preventing introduction of the Colorado potato beetle [*Leptinotarsa decemlineata*], the Minister of Agriculture has been authorised to indicate the countries from which potatoes may not be imported, and from which between 15 March and 14 October fresh vegetables may not be imported unless they are accompanied by an official phytosanitary certificate of the country of origin stating that the vegetables are free from Colorado beetle and come from localities in which the beetle does not occur and so far as is known has not occurred within a radius of 200 kilometres. (*Deutsches Handels-Archiv*, Berlin 1932, 86 Jahrg, 2 Oktoberheft, S. 2195-2196).

**Southern Rhodesia (2).** — The Importation of Plants Regulations published in Government Notice No. 462 of 5 August 1932, provide *inter alia* as follows:—

No person shall introduce any plants, including seed, except by post or through the following ports of entry, namely: Umtali, Salisbury, Gwelo, Bulawayo, Plumtree, Beitbridge or such port of entry as the Minister of Agriculture and Lands may allow by special permit.

Any plant, including seed, introduced may, before being delivered, be examined by an Inspector appointed for this purpose by the Minister.

Such plants, seed, receptacle or packing material may, when deemed necessary by an Inspector as a precautionary measure be treated at the expense of the consignee or addressee.

If any plant, or seed, be found actually infested with any insect, pest or plant disease it shall, including all packing material, be cleaned by and to the satisfaction of the Inspector, or if the Chief Inspector considers the infestation of a specially dangerous character be destroyed without delay, no compensation being paid.

(1) Communication from the official correspondent of the Institute, Professor M. EGLITS, Director of the Phytopathological Laboratory of the University, Riga.

(2) Communication from the Department of Agriculture, Entomological Branch, Salisbury, Southern Rhodesia to the International Institute of Agriculture.



The consignee shall, when called upon to do so, furnish a certificate establishing clearly the contents, origin and destination of the consignment.

The Government shall not be liable for any loss or damage that may result from the destruction or detention of articles under these regulations.

Part I of the Government Notice contains special regulations affecting the introduction of plants from overseas or from any State on the continent of Africa, not included in the Plant Interchange Schedule. The following restrictions are imposed :—

Importation of the following is prohibited, namely :—

Eucalyptus, acacia, coniferous, oak (*Quercus*) and plane (*Platanus*) plants or any portion thereof except seed ; live peach stones ; fresh stone fruits ; fresh citrus fruits and dried citrus peel, excluding candied citrus peel ; elm (*Ulmus*) seeds and plants from any country where the elm disease (*Graphium ulmi*) is known to exist ; chestnut (*Castanea*) seeds or plants from any country where the disease known as chestnut blight (*Endothia parasitica*) is known to exist ; any plant packed in soil other than special rooting compost.

For another group of articles importation is limited to introductions made by or under the direct supervision of the Department of Agriculture, Salisbury. This group includes grape vines, sugar cane, plants of banana, cacao, tea and coffee, citrus trees, budwood and seeds, cotton seed, lucerne plants and seed.

For a third group of articles importation is allowed only under special permit from the Department. This group includes : coffee seed for propagation, seeds of tobacco, maize and barley, tea, acorns and chestnut seeds.

Part II concerns regulations affecting the introduction of plants from the Union of South Africa and other African States included in the Plant Interchange Schedule.

Part III specifies the conditions attaching to grant of special permits for importation of certain plants, etc.

Applications shall be in writing and shall state the names and addresses of the applicant and the person from whom it is proposed to obtain the plants ; the exact names of the plants and the number of each variety it is desired to introduce ; the mode of consignment and the exact locality where it is proposed to grow the plants

Special regulations apply to :—

(1) *Citrus trees.* — Permits shall only be granted in respect of special varieties which are not procurable in Southern Rhodesia and are judged likely to be of benefit to the citrus culture of this land. The consignment shall be accompanied by an official certificate stating that the plantation from which the trees were taken was apparently free from serious insect pests and plant diseases, with special reference to citrus canker (*Pseudomonas citri*). The trees when imported shall be kept in quarantine with due supervision for a minimum period of three years

(2) *Tea plants and seeds.* — Each consignment must be accompanied by an official certificate to the effect that the blister blight (*Exobasidium vexans*) has not occurred in the region where the plants or seeds were produced.

(3) **Broom corn.** — The straws must be detached and the crowns from which they originate must be completely cut away or otherwise cut to shreds.

(4) **Maize seed.** — Each consignment must be accompanied by an official certificate to the effect that *Sclerospora* diseases of maize do not occur in the district in which the seed was produced. No consignment shall exceed 10 lbs. in weight.

(5) **Barley seed.** — Any consignment shall not exceed 10 lbs. in weight.

(6) **Fruit trees, forest trees, ornamental trees and shrubs and woody plants in general.** — The number covered by permits shall be limited to 12 trees or rooted plants and 100 cuttings of any variety and to an aggregate of 100 trees or rooted plants or 1000 cuttings during any one year.

(7) **Pome fruit trees, including ornamental species of *Cydonia*, *Malus* and *Pyrus*.** — Each consignment shall be accompanied by an official certificate stating that the disease known as fireblight (*Bacillus amylovorus*) is not known in the region where the plants were grown.

(8) **Cotton seed.** — Permits shall be limited to four ounces of each variety and shall only be granted in special justifying circumstances.

Part IV concerns regulations affecting the importation of potatoes into Southern Rhodesia.

No person shall introduce potato tubers, unless he produces :—

(1) a statement on oath from the consignor establishing clearly the origin of the potatoes and the identity of the consignment ; and

(2) a certificate from the Department of Agriculture of the declared country certifying that wart disease (*Synchytrium endobioticum*) does not exist within five miles of the places in which the potatoes have been grown. This certificate shall not be required :—

(a) if the Government thereof has certified to the Administration of Southern Rhodesia that the said disease has not been known to exist in that country,

(b) if the consignee produces an official certificate stating that the said disease has not been known to exist in the department in which the potatoes have been grown.

Any consignment of imported potatoes if found to be infested with root gallworm or root knot eelworm (*Heterodera marioni* [*radicicola*]) or with any other species of eelworm injurious to plants shall be refused admittance or destroyed.

Should any consignment on arrival be found to be infected with wart disease, it shall be totally destroyed by fire.

The text of the Government Notice is followed by Annexures A-E which are models of certificates and declarations as required by the said Notice.

\* \* \* By Government Notice No. 463 of 5 August 1932, the following countries are included in the Plant Interchange Schedule for the purposes of the above Importation of Plants Regulations :— Union of South Africa, Northern Rhodesia and the Belgian Congo.

**Rumania (1).** — The Ministry of Agriculture and Estates in 1932 undertook an active campaign to prevent an outbreak of black rust of cereals (*Puccinia graminis*).

The Ministry asked for the support of the following institutions to ensure the success of the campaign :— the dependent Services, the autonomous Administration of State Forests, the Ministry of Public Instruction, the Ministry of War, the autonomous Administration of Railways, the Department Headquarters, the Police Force.

The Services of the Ministry of Agriculture and Estates were required to conform with Orders Nos. 217.826 and 217.973 of 18 October 1932 ; the autonomous Administration of State Forests issued the Order No. 39.814 of 20 October 1932 to draw the attention of the forest districts to the action of the Ministry of Agriculture and Estates, and the Ministry of Public Instruction and the Department Headquarters received a series of instructions for distribution to their dependent organisations.

The period from 6 to 13 November 1932 was fixed as the time when shrubs of barberry (*Berberis vulgaris*), the host of black rust of wheat, should be destroyed with the utmost thoroughness.

**Saar Basin (2).** — By Police Ordinance dated 17 August 1932, issued by the President of the Government Commission with a view to preventing the introduction of the Colorado potato beetle [*Leptinotarsa decemlineata*], it is forbidden to import potatoes, tomatoes, aubergines, plants with or without soil, plant refuse or any sacks or other materials which have been used for packing such, coming from regions of France infested with the Colorado beetle or from regions in which there are special precautionary and control measures in force for preventing the spread of the beetle.

Importation of the products mentioned coming from other regions of France is permitted only by rail and if the consignments arrive in intact packages or in sealed wagons. They must also be accompanied by a certificate of origin and health, the model of which is annexed to the Ordinance. The certificate must be issued by an official of the French Plant Protection Service or by a Director of the Agricultural Services and is valid for 20 days from the date of issue. A copy must be sent to the Central Plant Protection Station at Saarbrücken which may inspect consignments on arrival.

During the winter months importation will be allowed of potatoes coming from regions of France which are not infested but are submitted to special precautionary and control measures, on condition that the special safety measures prescribed by the French Government have been observed and that such is stated on the certificate.

Consignments not conforming to the requirements of the present Ordinance will not be delivered to the consignee. Consignments coming from non-infested

(1) Communication from the official correspondent of the Institute, Dr. Tr. SĂVULESCU, Head of the Phytopathological Section of the Agricultural Research Institute of Rumania, Bucharest.

(2) Communication from the Biologische Reichsanstalt für Land- und Forstwirtschaft, Berlin-Dahlem, official correspondent of the Institute.

regions of France may however be delivered if an inspection carried out at the expense of the persons concerned removes all suspicion of infection.

Consignments which are refused must be returned by the importer within eight days, failing which they will be destroyed at his expense or utilised in such a manner as to avoid all risk of propagating the Colorado beetle.

No certificates of origin and health will be required for consignments coming from the Departments of the Haut-Rhin, Bas-Rhin, Moselle and Meurthe-et-Moselle

**Tripolitania** (1). — By Governorial Decree No. 11325 of 28 November 1932 the people of the Colony and more particularly the rural population are obliged to report to the nearest offices of the civil or military authorities of the Colony all locust swarms and their direction of flight, and the presence of any eggs, hoppers or adults of which they are aware.

The civil and military authorities of the Colony, whatever their grade and duties,\* are required to give effective assistance in locust control, to inform the Government (Land Settlement Department) and the Agricultural Bureau directly and immediately of the receipt of the above mentioned reports and of the results of the control investigations which they are obliged to carry out with all the means at their disposal

All the able-bodied population of infested zones is expected, unless there is some legitimate excuse, to take part in the locust control work, which is undertaken and directed by the Government through the intermediary of the competent organisations.

Holders by any right of agricultural land must, actively and in accordance with the instructions given, provide for the control of adults, hoppers and eggs found upon their land and must allow the persons engaged in the work free access to their land.

The regulations and instructions for the organisation and development of control measures and for the methods to be used are annexed to the present Decree and have been endorsed by the Governor, approved and made effective.

Offences against this Decree and against any which may be prescribed by the competent authority for locust control in the course of the campaign will be punishable under article 650 of the Penal Code.

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[*Bucculatrix gossypii*, *Euxoa radians*, *Heliothis obsoleta*, *Earias huegel*, *Antarchaea chionosticta*].

(1) Communication from the Italian Ministry of the Colonies, transmitted to the International Institute of Agriculture by the Italian Ministry of Foreign Affairs.

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RÉPUBLIQUE FRANÇAISE MINISTÈRE DES AFFAIRES ÉTRANGÈRES Procès-verbal des séances de la deuxième Conférence internationale pour les recherches antiacridiennes. Paris, 15 juillet-23 juillet 1932. Paris, Editions de la Société Entomologique de France, 1932, 29 p.

[The Report of the meetings of this Conference is accompanied by the following appendices :—

I. Rapport sur les recherches entreprises pendant l'année 1931 et le premier semestre de l'année 1932, par l'Imperial Institute of Entomology [de Londres]. — II. Programme, proposé par la Délégation britannique, des recherches que l'on se propose de faire pendant la période d'avril 1932 à avril 1933. — III. Déclaration de M. le Professeur Silvestri, Délégué du Gouvernement italien. — IV. Déclaration de M. le Dr Chiaramonte, Délégué des Colonies italiennes. — V. Note sur le problème acridien en Egypte, par A. M. Mistikawy. — VI. Communication de M. Bredo sur les sauterelles du Congo belge. — VII. Déclarations et propositions de la Délégation française. — VIII. Signes adoptés par la Réunion du 28 septembre-1<sup>er</sup> octobre 1931 pour les cartes des Acridiens migrants].

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SAVASTANO, GIULIO. Ricerche sperimentali sul marcio dei frutti degli agrumi I - Specie batteriche e fungine isolate ed alcune loro caratteristiche biologiche *Bollettino della R. Stazione di Patologia Vegetale*, Roma, 1932, anno XII, n. ser., n. 3, pp. 306-342, figg. 1-2, tav. XII-XVIII

[*Phylomonas citriputeale*, *Phytophthora citrophthora*, *Sclerotinia minor*, *Sclerotium*, *Penicillium digitatum*, *P. italicum*, *Oospora Citri-Aurantii*, *Botrytis cinerea*, *Fusarium lateritium*, *Aspergillus niger*, *Colletotrichum gloeosporioides*, *Trichoderma lignorum*, *Septoria Citri*, *Pleospora herbarum*, *Rhizopus nigricans*, *Dothiorella* sp.]

SAVASTANO, GIULIO. Una gommosi del limone causata da «*Dothiorella*» *Bollettino della R. Stazione di Patologia Vegetale*, Roma, 1932, anno XII, n. ser., n. 3, pp. 245-274, figg. 1-2, tav. VI-XI. Bibliografia, pp. 273 [In Italy and elsewhere]

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SCHULTZ, ENRIQUE F. La extirpación de las principales cochinillas que infestan los «*Citrus*» en Tucumán. *Revista Industrial y Agrícola de Tucumán*, Buenos Aires, 1932, tomo XXII, núms. 3-4, págs. 73 a 75 [*Chrysomphalus aspidium*, *Lepidosaphes beckii*, *Coccus hesperidum*, *Chionaspis citri*, *Tcerya purchasi*]

SEVERIN, HENRY H. P. Transmission of carrot, parsley, and parsnip yellows by *Cicadula divisa* *Hulgardia*, Berkeley, California, 1932, Vol. 7, No. 3, pp. 163-179, figs. 1-7. Literature cited, pp. 179

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[In Turkish with title and text also in French *Marchalina hellenica*, *Leucaspis loewi*, *Thaumetopoea pityocampa*, *Lasioampa pini*, *Retinia buoliana*, *Myelophylus pimperda*, *M. minor*, *Tomicus rectangularis*, *Sirex juvencus*]

SUFER PAUL Der Apfelblattsäugerheit im Lgnach (Schweiz) *Anzeiger für Schädlingkunde* Berlin 1932 VIII Jahrg Heft 12 S 148-155 Abb 1-9  
[*Psylla mali*]

FILLER L W A superficial spotting disease of the Lord Wolseley apple *The New Zealand Journal of Science and Technology* Wellington N Z 1932 Vol XIV, No 2 pp 111-113 1 fig  
[The spotting is a photo chemical effect and not a temperature effect]

THOMAS P H and RAPHAEL T D The composition application and general effects of the main orchard sprays at present applied to pome fruits *The Tasmanian Journal of Agriculture* Hobart 1932 Vol III No 4 pp 145-153 4 figs

VAN HALL C J J Cacao Second edition London Macmillan and Co Limited 1932 XVIII + 514 pp 170 figs

[Chapter IX Diseases and Inemics (pp 226-30, figs 84-109) has been considerably enlarged in comparison with the first edition which appeared in 1914 under the title of 'Cocoa']

VAYSSIÈRE P Insectes utiles ou nuisibles acclimatés en France ou dans les Colonies depuis un siècle *Société Entomologique de France Livre du Centenaire* Paris 1932 p 629-648

*Phylloxera vastatrix*, *Icerya purchasi* and *Neurus cardinalis*, *Pseudococcus nipaue*, *Dactylopius coccis*, *Pulvinaria floccifera*, *Diaspis* (*Sasakiaspis*) *pentagona*, *Chrysomphalus dictyospermi*, *Chrys aonidum*, *Morganella longispina*, *Lepidosaphes ha waiensis*, *I* (*Cocomitilus*) *hambusicola*, *Aspidiotus linderæ*, *Parlatorea blanchardi* and its enemies *Pharoscymnus anchorago* and *Cybocephalus seminitum*, *Iriosomes lungerum* and its parasite *Aphelinus mali*, *Ceresa bubalus*, *Stephanitis rhododendri*, *Sphenoptera gossypii*, *Carpophilus decipiens*, *Niptus hololeucus*, *Pantonomus godmani*, *Leptinotarsa decemlineata*, *Cryptolacmus montrouzieri*, *Xanthodes intercepta*, *Phthorimaea operculella* y *Habrobracon johannseni*, *Gracilaria azaleella*, *Grapholitha leplastriana*, *Laspeyresia molesta*, *Pectinophora gossypiella*, *Ceratitis capitata*, *Contarinia torquens*, *Iridomyrmex humilis*, *arrogans*, *Schedius kuwanae*]

VAYSSIÈRE P Une opinion sur le doryphore et sur le pou de San Jose *Bulletin de la Société d'Encouragement pour l'Industrie Nationale* Paris 1932, 131<sup>e</sup> année, n<sup>o</sup> 11, p 588-596 fig 1-5

[*Leptinotarsa decemlineata*, *Aspidiotus perniciosus*]

VIDAL J L Irregularities de développement du mildiou en Charente *Le Progrès Agricole et Viticole*, Montpellier 1932 49<sup>e</sup> année n<sup>o</sup> 50 p 570-572  
[*Plasmopara viticola*]

VIENNOT, G Une Ustilaginée nouvelle pour la France, *Ustilago oxalidis* Ellis et Tracy parasite d'*Oxalis stricta* L. *Revue de Pathologie Végétale et d'Entomologie Agricole*, Paris, 1932, tome XIX, fasc 1 p 17-23

VILLEDIEU, G Cuivre et mildiou *Le Progrès Agricole et Viticole* Montpellier, 1932, 49<sup>e</sup> année, n° 49, p 536-539  
[*Plasmopara viticola*]

VINSON CARL G Mosaic diseases of tobacco V Decomposition of the safranin-virus precipitate *Phytopathology* Lancaster Pa 1932 Vol 22 No 12 pp 965-975

VOGLINO P La macchia nera del nocce *Bollettino del Laboratorio Sperimentale (Regio Osservatorio Regionale) di Fitopatologia* Torino 1932 anno 9 n 6 pp 85-86  
[The writer is of the opinion that the disease is caused by *Pseudomonas Juglandis*]

VOGLINO P Pianta infestanti i vigneti *Il Coltivatore e Giornale Italiano*, Casale Monf 1932 anno 79 e 58 n 49 pp 628-630  
[*Cynodon Dactylon* and *Sorghum halepense* in vineyards in Piedmont]

V SENG-BUSCH R und LOSCHAKOWA HASSENBUSCH N Immunitätszüchtung bei Tomaten Vorläufige Mitteilung über die Züchtung gegen die Braunfleckenerkrankheit (*Cladosporium fulvum* Cooke) resistenter Sorten *Der Züchter* Berlin 1932 4. Jahrg. Heft 11 S 257-264 Abb 1-5 Literatur S 263-264

VON TUBFUF Ein ungewöhnlicher Fall von ausgebreiteter Cecidomyiose in einem Kiefernstangenholze *Zeitschrift für Pflanzenkrankheiten (Pflanzenpathologie) und Pflanzenschutz* Stuttgart 1933 43. Bd. Heft 1 S 29-30 1 Abb  
[*Cecidomyia brachyntera*]

VON TUBFUF Warnung Ein neuer Schädling wieder vor den Toren Deutschlands *Zeitschrift für Pflanzenkrankheiten (Pflanzenpathologie) und Pflanzenschutz* Stuttgart 1932 42. Bd. Heft 12 S 561-567 Abb 1-7  
[*Aspidiotus perniciosus*]

VON WINNING ERIKA Die Bekämpfung der Kartoffelkäfers (*Leptinotarsa decemlineata* Say) in Frankreich *Anzeiger für Schädlingskunde* Berlin 1932 VIII. Jahrg., Heft 11 S 129-135, Abb 1-9

VRYDAGH J.-M Les invasions de criquets migrateurs dans la Province Orientale *Bulletin Agricole du Congo Belge* Bruxelles 1932 vol XXIII, n° 2 p 147-165, fig 57-67 Bibliographie, p 165  
[*Locusta migratoria*, *Nomadacris fasciata*, *Schistocerca gregaria*].

WELSH JOHN N The effect of smut on rust development and plant vigour in oats *Scientific Agriculture* Ottawa, Canada, 1932, Vol XIII, No 3, pp 154-164, fig 1 Literature cited, p 164  
[With title and summary in French *Ustilago Avenae*, *U. levis*, *Puccinia graminis* f. *Avenae*, *P. coronata* f. *Avenae*].

WILLAUME, F. Les problèmes actuels de la défense des cultures en France. *Bulletin du Comité de Propagande pour la Défense et l'Amélioration des Cultures*, in *La Revue des Fruits, Légumes et Primeurs*, Paris, 1932, 3<sup>e</sup> année, n° 11, p. 35-39; n° 12, p. 43-46, 2 fig.

ZACHER, FRIEDRICH Die tierischen Samenschädlinge in Freiland und Lager. Spinnentiere, Käfer und Hautflügler. (Wissenschaft und Technik des Gartenbaues. Herausgegeben von Professor Dr. Höstermann, Berlin - Steglitz und Landesökonomierat H. R. Wehrhahn, Hohenheim b. Stuttgart Heft 5). Neudamm, Verlag von J. Neumann, 1932, VIII + 78 S., 20 Taf.

[A survey of the animal parasites of seeds and fruits of the wild and cultivated plants of the whole world does not yet exist in spite of the obvious practical utility of such a work, not only for those concerned in the trade in seeds but also for the Seed Control Stations and establishments concerned with plant protection and supervision of imports.

The present volume is a beginning at filling this gap and is specially welcome and meritorious as the data and observations in this particular field are still scarce and largely incomplete, particularly as regards non-European countries, and must be patiently got together from scattered sources.

The author who hopes to publish later a complete manual of the subject, deals in this first part with the Crustacea, the Arachnoidea, the Coleoptera and the Hymenoptera; the second part is to deal with the remaining orders of Insects, the Nematoda, etc., and will describe shortly the methods of control which for many species the author has already indicated.

The value of the work is enhanced by 71 clear and largely original figures].

## NOTES

**Competition for the Discovery of New Locust Control Methods.** — The 'Direction générale' of Agriculture, Commerce and Land Settlement of Morocco (French Zone) has just informed the International Institute of Agriculture that the competition [see this *Bulletin*, 1930, No. 12, p. 196] has taken place but the Commission responsible for awarding the prizes considered that the inventions entered did not fulfil the conditions of the competition.

# INTERNATIONAL BULLETIN OF PLANT PROTECTION

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## DISCOVERIES AND CURRENT EVENTS \*

### **French North Africa: Desert Locust (*Schistocerca gregaria*) (1).**

#### **ALGERIA.**

- 13 January 1933 — A small red swarm coming from the S. W. passed El-Goléa at 3 p. m., flying N.
- 15   "   "   — A pink swarm passed Colomb-Béchar.
- 17   "   "   — A red swarm coming from the W. settled at midday at Ouargla. Departed on 18th at 2 p. m., flying S. E.
- 19   "   "   — A large red swarm settled at Metilfa, Oued Gharbi (120 km S. S. W. of El Abiod-Géryville), departed towards the S. E.
- 23   "   "   — A medium sized red swarm coming from the N. passed El-Goléa at midday, flying S.
- 26   "   "   — A red swarm settled at Hassi Khenami (80 km E. S. E. of Ouargla).
- 27   "   "   — A red swarm settled at Hassi Tartrat (300 km. S S. E. of Ouargla). In the Gassi Touil numbers of locusts killed by frost (?) cover the ground over 20 km.  
A small red swarm coming from the S. settled at Ghardaïa. Left again on 28th at 8 a. m., flying N.
- 28   "   "   — A large swarm coming from the W. passed el Oued, flying E. A medium sized red swarm coming from the S. passed El Ateuf (8 km E. S. E. of Ghardaïa) flying E.
- 29   "   "   — A large red swarm coming from the S. W. settled in the evening 1 km. E. of Guerrara (75 km. E. N. E. of Ghardaïa) Departed on the morning of the 30th, flying W.  
A sparse red swarm coming from the W. (driven by a hot wind) settled at midday at Ouargla. Left at 3 p. m., flying E.
- 30   "   "   — A somewhat large red swarm coming from the S. E. passed over the Ouargla track 4 km N. of Zelfana (50 km E. S. E. of Ghardaïa), flying N. N. W.
- 31   "   "   — A red swarm of 10 × 1 km coming from the S. settled at 3 p. m. at Oued Messous, 60 km S. E. of Brézina (130 km S. S. E. of Géryville).  
A swarm of 10 × 3 km coming from the S. settled at midday 10 km E. of El Abiod (100 km S. W. of Géryville). Departed on 1 February towards the N. E.

(\*) Under this and the third heading the countries are arranged in French alphabetical order.

(1) Communication from the Government General of Algeria (Direction des Services Économiques) to the International Institute of Agriculture



## TUNIS.

- 29 January 1933 -- A sparse pink swarm coming from the S. W. passed Djeffara on the road from Médenine to Beni Kreddache (15 to 20 km W. of Médenine), flying N. E.
- 31   "       "   — A large red swarm coming from the S. passed Bir Agareb (27 km W. of Kébili), going N.  
                   A small red swarm coming from the W. passed Mergueb ed Diab (54 km E. S. E. of Kébili) flying E.  
                   A small red swarm coming from the W. passed Bir Touil el Adara (61 km S. of Kébili), flying E.

## MOROCCO.

- 1 January 1933 — A dense red swarm,  $5 \times 3$  km, coming from the N.E. settled in the region of Tahanaout 15 km S. of Marrakech).
- 2       "       "   — A red swarm of  $2 \times 1$  km coming from the S. settled to the N. of the forest of Adénine (Sous). Departed on the 3rd, flying N.E.  
                   A red swarm of  $5 \times 3$  km settled during the night to the N. of Clichaoua (region of Marrakech) Departed on the 3rd, flying W.
- 3       "       "   — A swarm coming from the forest of Adénine settled on the Aït Abbès (10 km E. of Agadir)
- 4       "       "   — A red swarm coming from the E. passed in the afternoon over Ini N' Tanout (region of Mogador), flying W.  
                   A pink swarm of  $4 \times 2$  km coming from the S passed the Ouled Ziad (30 km E. of Taroudant).  
                   A swarm of  $20 \times 20$  km coming from the S.E. settled during the night 30 km E. of Cap Ghir.  
                   A red swarm of  $5 \times 3$  km settled during the night on the Mouzgaoum, near Argana (region of Sous). Departed on the 5th at midday, flying W.
- 7       "       "   — A red swarm of  $10 \times 2$  km coming from the S. settled on the Ida ou Bouzia (N. E. of Tamanar).
- 10       "       "   — Swarms reported in the Aït-Atta (border region).
- 11       "       "   — Numerous red swarms of  $20 \times 20$  km coming from the S. and W. settled near Bou Arfa (Figuig). They did not continue N. on account of the cold in the Hauts-Plateaux.
- 14       "       "   — A red swarm of  $3 \times 2$  km coming from the S settled for the night on the Ida ou Bouzia (region of Mogador).
- 16       "       "   — Numbers of pink swarms settled along the road from Colomb-Béchar to Bou-Anane and Bou-Denib
- 17       "       "   — Numerous pink swarms settled between Bou-Denib and Erfoud.  
                   A red swarm of  $6 \times 3$  km coming from the S. settled on the Ida ou Kazou (S. of Tamanar). Departed on the 18th flying N.E. and settled again in Ida ou Bouzia (E. of Tamanar).

19 January 1933 — A sparse swarm 20 km in length crossed the Atlas at the pass of Tizi N'Tichka (2,200 m) flying N. Descended the upper valley of the R'dat and settled in the afternoon between Tadert and Arhbalou.

Circling swarms at Ksar es Souk and S. of Kerrando

20   "       " — A pink swarm of 1 sq. km passed 15 km N. of Tadiroust (border region), flying N.E.

23   "       " — A pink swarm of medium density,  $5 \times 2$  km, passed at 11.30 a. m. at Toulal and at 2.30 p. m. at Gourrama, flying N.W.

24   "       " — A pink swarm of  $2.5 \times 1$  km passed 1 km E. of Talsint, flying N.W.

### South Australia: Some Crop Pests (1).

The 'Lucerne flea' (*Sminthurus viridis* L.) was generally active a month earlier in 1932, owing to the early autumn rains. The insect demands a high humidity in its surroundings, and the moisture in the surface soil is the most important factor affecting these conditions. Certain of the eggs remain viable in the dry surface soil during the summer months and hatch in autumn when the temperature and soil moisture are favorable. In the Adelaide hills district, in low-lying damp areas, active individuals may be noted until December. In similar situations the over-summering eggs were hatching out towards the end of February in 1932.

The cherry and pear slug (*Caliroa limacina* Retz. = *C. cerasi* Linn.) was recorded for the first time as a pest in South-Eastern districts in November, 1930.

The apple blossom thrips (*Thrips maginis* Bagnall) occurred in plague numbers throughout the orchard and vine districts during the spring of 1931. Late flowering varieties of apples like 'Rome Beauty' suffered severely, but early varieties like 'Cleopatra' largely escaped damage as they blossomed before the period when the peak emergence of the thrips occurred. Berry fruits also suffered heavily. Vines were heavily infested in November and December, but there was no definite evidence that the setting of normal bunches of grapes was seriously affected.

### Egypt: Desert Locust (*Schistocerca gregaria*) (2).

Egypt was invaded by swarms of the desert locust during 1932 on two occasions.

The first began on February 13 when two immature locust swarms passed over Kuntilla in Sinai flying westwards. Next day they were found settling

(1) Communication from the official correspondent of the Institute, Mr J. DAVIDSON, D. Sc., F. E. S., Entomologist, White Agricultural Research Institute, University of Adelaide, Glen Osmond, South Australia.

(2) Communication from the Chief Plant Pathologist, Plant Protection Section, Ministry of Agriculture, Egypt, to the International Institute of Agriculture.

at Wadi Beidah, wandered about within our boundaries for two days and crossed the Eastern frontiers on the 16th. to Wadi Araba N. E. of Akaba.

Locust news from Transjordan confirmed the appearance of locusts at Akaba on January 28 and February 13. Sinai governorate reported that locusts were breeding extensively in some localities of Northern Hedjaz.

An official from the Plant Protection Section inspected all wadis of North Eastern Sinai. Only scattered individuals were found; most of the valleys were unsuitable for breeding. Another official was delegated to Sinai on March 25th. and remained in the Peninsula for a month during which he scouted several wadis but came through no locusts.

The second invasion started early in June when sexually immature swarms appeared suddenly at Hurgada, Kosseir and on the Red Sea coast opposite Assuan and penetrated to the Eastern Desert. Their movements were confined to this desert and the Province of Assuan.

The main points observed during this invasion were:—

(1) Practically all the locusts came from the N.E. and E. and flew S. and S. W. with the blowing winds.

(2) Swarms were actually observed on several occasions crossing the Red Sea.

(3) The country lying between Wadi el Gemal and Bir Shelatin received most of the invaders.

They remained here about six days and devoured all the green vegetation of the desert.

(4) The Red Sea littoral from Kosseir to the Sudan frontiers was inspected by an official of the Plant Protection Section with a car patrol during the period from June 14th to the 23rd. Few scattered living red locusts were found in this long desert stretch with heaps of dead locusts on the shore.

(5) In Assuan the majority of the locusts settled near the edge of cultivation. They were combatted by flame guns in the barren land or on trees and by collecting in the early morning.

(6) They caused very negligible damage.

(7) Brigades were distributed in the different agricultural centres from Edfu to El Derr bordering the Sudan.

(8) About June 15 the country was free from the pest. All locusts which escaped death penetrated into the Sudan.

\* \* \*

On 12 January 1933, a big swarm of the desert locust was observed at Wadi Gilf Kebir in the Libyan Desert, Lat.  $25^{\circ} 10'$ , Long.  $25^{\circ}$ . The locusts completely devoured all the green vegetation growing in the vicinity. Further news are expected in the near future.

The part of the desert lying between Kom Ombo on the River Nile and Gebel Iliba in the South Eastern Desert, Lat.  $22^{\circ} 10'$ , Long.  $36^{\circ} 40'$ , is being scouted at present for locust research work. This place is frequently visited by locusts.

## United States of America: Losses due to Cranberry False Blossom in New Jersey (1).

The cultivated cranberry (*Vaccinium macrocarpon*) occupies a position almost unique in the horticulture of the United States in that it is a native plant grown chiefly within its natural range and one which has never as yet been influenced by artificial crossing or as far as is known affected by fungi from the outside. Perhaps for this reason, losses in the chief producing areas have, until the last decade, been confined largely to injuries due to flooding and frost and to fruit rots.

From a commercial standpoint the chief problem has been that of the control of the fruit rots. Sometime prior to 1908, however, there was discovered in Wisconsin a disease known as false blossom which during the past ten years has become so serious in the large cranberry growing sections of Massachusetts and New Jersey that it has been the subject of much study. The conspicuous features of cranberry false blossom, which may appear on different plants, are a malformation of the flowers, replacement of the flowers by short branches with small leaves, a tendency of affected plants to produce weak, slender branches from usually latent axillary buds giving a witches'-broom effect, and excessive vegetative growth.

In 1929 it was finally demonstrated that false blossom was readily transmitted by the leaf hopper, *Euschis striatulus* Fall. Since that time vigorous measures have been undertaken for the control of this insect carrier and in Massachusetts at least the progress of the disease has apparently been slowed down. New Jersey on the other hand is now feeling the full force of what is evidently the most serious disease so far known to attack cranberries.

R. B. Wilcox has recently compiled statistics of yield of cranberries in New Jersey from 1889 to the present and has plotted curves using as an index for each year the average of that particular year with that of the two preceding and the two following years. These show in general a gradual increase both in total yield for the State and in the yield of the different varieties which reached a peak in 1923 or 1924. Since then the decline has been continuous and rapid. Considering the maximum yield (1923) as 100 per cent, production for the Early Black variety has fallen off 18 per cent, for the Howes 31 per cent, for the Champion 37 per cent, « Native Jerseys » 43 per cent, and for the Centennial 61 per cent. This represents a total reduction for all varieties of 33 per cent.

The rate of decline in production of the different varieties is directly comparable to their susceptibility to false blossom as observed in other regions. The figures as a whole furnish the most striking evidence of the severity of this disease. To find a parallel in the United States it would be necessary to go back to the destruction caused by peach yellows in the Delaware Peninsular and the Blue Ridge region in the last decade of the nineteenth century.

(1) Communication from the official correspondent of the Institute, Dr. Neil E. STEVENS, Senior Pathologist, Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington.

**Southern Rhodesia: Locust Invasion in 1932 (1).****Report No. 1. To End of September.**

Following reports of southward movements of swarms of the Tropical Migratory Locust (*Locusta migratorioides*) in Nyasaland swarms of this species commenced to enter Southern Rhodesia from the N. E. on the 25th September and by the end of the month some six or seven swarms had been located. The general direction of flight was S. W.

The following districts have been invaded, namely, Lomagundi, Darwin, Mazoe, Mrewa, Mtoko, Hartley, Marandellas and Charter.

Specimens were obtained from two swarms and proved to be of the above species.

The ovaries were found on dissection to be poorly developed and egg-laying obviously distant.

The swarms have moved rapidly, and damage so far reported has been slight.

**Report No. 2. Fortnight ending 15th October.**

It has not been possible to follow the individual movements of all swarms in the Colony during the above period and some of the original swarms are reported to have split up. There are apparently some twenty to thirty swarms in the Colony, moving in a general S. W. to W. direction. Some swarms have been reported nearing and heading towards the Bechuanaland border in the Wankie, Nyamandhlovu, and Northern portion of Bulalima-Mangwe districts. One swarm was reported as far back as the Mrewa district on the 13th. Swarms have also been reported flying up both banks of the Zambesi River near its confluence with the Chiwore (3rd) and Recomitje (8th) Rivers.

The following districts were invaded or traversed during the period under review:— Inyanga, Umtali, Makoni, Mtojo, Mrewa, Salisbury, Marandellas, Charter, Hartley, Chilimanzi, Gwelo, Bubi, Sebungwe, Lomagundi, Wankie, Nyamandhlovu, and Bulalima-Mangwe.

Specimens examined have shown the ovaries to be 8 to 10 mm. long measured above the alimentary canal. Neither egg-laying nor mating has been reported.

Little feeding has been reported, and that mostly on young grass. A few reports of attack on young maize have been received and one report states that both old and new foliage of native trees has been devoured.

All specimens received, apparently representing from ten to fifteen swarms, were of the species *Locusta migratoria migratorioides*.

**Report No. 3. Fortnight ending 29th October.**

Comparatively few reports have been received concerning the movements of locusts during the period under review. The hindmost swarms reported were near Gatooma on 16th, and near Miami in the Lomagundi District on 17th.

(1) Communication from the official correspondent of the Institute, Mr. Rupert W. JACK, F. E. S., Chief Entomologist, Department of Agriculture, Entomological Branch, Salisbury, Southern Rhodesia.

Other reports refer to swarms near Gokwe in the Sebungwe District on 16th, Bubi District on the same date, Nyamandhlovu District on 18th and Wankie District on dates between 16th and 23rd.

It is surmised that the swarms, comprising the whole invasion, have either crossed over into Bechuanaland from the Wankie, Nyamandhlovu, and northern Bulalima Mangwe Districts, or have broken up or settled in the Kalahari between the Bulawayo-Victoria Falls Railway line and the Border.

All specimens received were of the species *L. m. migratorioides*.

## VARIOUS QUESTIONS

### Second Meeting of the Committee for the Study of Locust Biology at Algiers (1).

The second meeting of the Committee for the Study of Locust Biology [see this *Bulletin*, 1932, No. 5, pp. 74-79] was called at Algiers on 9-11 January 1933 by the Governor General of Algeria.

The following were among the questions discussed: —

S é g o u - S a n - T i l m b u k t u E x p e d i t i o n (French West Africa).

— The expedition has been formed and has already begun its mission.

The problem before the Committee, whose ultimate object is the delimitation of the permanent breeding grounds, requires for its solution not only the determination and study of the biological characteristics of the locusts during transformation from the solitary to the gregarious phase, but also and more especially the study of the relations between the phenomena of the phases and the characteristics of the environment in which the locusts develop. The work of the expedition sent to study locust biology will therefore be many sided and will include: —

(1) the study of the biology and behaviour of the species;

(2) a meteorological study of the localities investigated (climate of the region over which the species occurs and the micro-climate of stations within that region, that is to say, variations of temperature, humidity, insolation, etc. on small areas within the limits of the region in which the species develops);

(3) a botanic study of the habitat of the species;

(4) research on the animal and plant associations of the biological communities to which the species studied belongs.

The areas inhabited by *Locusta migratoria* and *Schistocerca gregaria* are very extensive; the position of the permanent breeding grounds are only inferred from the directions taken by swarms and the study of specimens from different regions.

(1) From the Report of the minutes of the Meeting communicated to the International Institute of Agriculture by its official correspondent, Mr M. DELASSUS, Chief of the Crop Protection Service, Government General of Algeria, Algiers.

The fullest possible documentary evidence is essential for directing the researches of the expedition into the regions where the necessary conditions for the formation of permanent breeding grounds occur. Further, the personnel of the expedition must be supplied with equipment and appliances to enable them to make and preserve scientific collections and to make and record the necessary observations.

The collections and records obtained by the expedition can be studied only in part in the field. Provision must therefore be made for supplementary study under normal laboratory conditions.

The first work of the expedition was carried out in the Circle of Macina in the Macina - Dioura - Dia region.

Traces of numerous swarms of *L. migratoria migratorioides* ph. *gregaria* were found along the banks of the Niger between Bamako and Macina.

*L. migratoria migratorioides* ph. *solitaria* was observed for the first time about forty kilometres up the river from Macina.

On leaving Macina a band of *L. migratoria migratorioides* ph. *congregans* was observed on the Monimpé dyke. It covered an area of approximately 10 square metres and was made up of hoppers of the first to the penultimate stage.

At Monimpé and at Nono, villages outside but near to the flood zone, there were large quantities of *L. migratoria migratorioides* in the winged stage. They belonged to the gregarious phase, and had all only recently become winged.

During the journey from Famesala to Dia by canoe through the grasses emerging from the floods it was found that the grass was inhabited by adults of *L. migratoria migratorioides* in the solitary phase.

The same fact was observed at Dia where locusts were found on the still flooded part of the plain as well as on that from which the floods had receded. All the locusts taken in the flood zone between Famesala and Dia belonged to the generation which had developed before the floods during the winter of 1932.

Study of the females showed that the degree of development of the ovaries at the time of observation was closely related to the nature of the locality occupied by the species. On a low-lying island which had been only partly flooded and for only a short time all the females taken had developing ovaries. In the zone in which the floods had recently subsided but in which the ground was already dry, 82 % of the females had ovaries in process of development. In the zone from which the floods had just subsided but where the ground was muddy and covered with pools the percentage was only 14 %. A comparison of the data obtained at Dia on ovary development with data obtained at Macina and Nono shows that at Macina, which is above Dia and from which the floods subsided early in November, the development of the generation after the winter one was ahead of that of Dia, and hoppers of all stages of this new generation were observed on 28 November.

At Nono, which is beyond the flood zone, a generation of *L. migratoria migratorioides* following the winter generation was able to develop at the end of the

winter and the adults of this generation must have appeared about October and November.

The discovery of the relationship between the maturing of the ovaries in *L. migratoria migratorioides* and the degree of flooding of the zone by the waters of the Niger may be of primary importance for defining the position of the zone in relation to the permanent breeding centres of the species.

A study of the behaviour of *L. migratoria migratorioides* during and after the retreat of the flood waters, together with a study of the climatic peculiarities of the season, may certainly throw some light on the question.

No specimens of *Schistocerca gregaria* were observed on the journey from Baniako to Gao. According to information collected over the region between Bourem and Tobankort small bands of hoppers, numerous but of little importance, were observed in the Tilemsi valley during the rainy season of 1932. About 250 kilometres north of Tobankort in the zone between the Sahel and the desert several specimens of *Schist. gregaria* ph. *solitaria* were observed on 1 January 1933.

During the rainy season (June-October) the study of *L. migratoria migratorioides* must be undertaken in the zone bordering on the flood zone of the Niger to the north of Macina.

The proximity of this latter region to the valley of Tilemsi where information and observations have shown the presence of *Schist. gregaria* allows the hope that it may be possible to concentrate the investigations of the two species in the relatively restricted area of the loop of the Niger. Goundam may be named as the probable centre of the activities of the expedition.

Biological study of the Moroccan locust (*Locustanus maroccanus*). The study of the transformation of this locust from the sedentary to the migratory phase [see this *Bulletin*, 1932, No. 5, p. 76] will be carried out under the auspices of the Government General of Algeria.

Questionnaires. — In the questionnaire approved by the first meeting of the Committee [see this *Bulletin*, 1932, No. 5, pp. 77-78] the following modification was adopted: — 'Indicate also the orientation of the axis of the insect in flight'.

The Committee also adopted a second model questionnaire including only essential questions. The following is the wording of the simplified questionnaire:—

#### I. -- OBSERVATIONS ON THE PASSAGE OF MIGRATORY SWARMS.

- (1) Locality;
- (2) Distance and direction in relation to a fixed point on a map (scale 1 : 2,000,000);
- (3) Date and hour;
- (4) Direction of flight;
- (5) Species recognised (Attach wing of a specimen insect from the swarm);
- (6) Time of setting and departure.

#### II. -- OBSERVATIONS ON LAYING.

- (1) Locality;
- (2) Date;
- (3) Direction from which locusts arrived;
- (4) Description of breeding grounds.



**Internal organisation of the Committee.**— According to this ruling the Committee has as local information centres : —

for Algeria — the Crop Protection Service of Algeria;	
for Morocco — the Crop Protection Service of Morocco;	
for Tunisia	} the Phytopathological Branch of the Agricultural Service.
for French West Africa	
for French Equatorial Africa	

The permanent centre is the Crop Protection Service of Algeria.

The Committee includes in the first instance the executive members appointed by the VIIth North African Conference and delegates from the various countries that are members of the organisation. Any competent person may be co-opted in a consultative capacity.

In addition to the information collected by the local centres the Committee receives documentation from scientific organisations and voluntary research workers relating to locust biology.

The Committee follows the general instructions given by International Conferences and in its turn presents to the Conferences resolutions which it considers should be adopted.

In connexion with technical questions the Committee corresponds directly with the Imperial Institute of Entomology of London which is the International Centre for Locust Studies.

It prepares and presents recommendations to the Governor General of Algeria for questions relating to Algeria and through its intermediary for those relating to other Governments of French Africa.

**Draft of the resolutions of the Committee for the VIIIth North African Conference.** — ' Referring again to the question of locust biology considered by previous Conferences the VIIIth North African Conference decides : —

(1) That the Committee for the Study of Locust Biology having its headquarters in Algiers and supplied with information by the local Crop Protection Services or, failing that, by the competent Administrative Service of the Countries taking part, has its permanent centre in the Crop Protection Service of the Government General of Algeria;

(2) That the choice of the organisations and persons to be co-opted in a consultative capacity shall be left to the Committee ;

(3) That the funds for the current expenses of the permanent centre, for the publication of the works of the Committee or the expeditions, for the remuneration of the specialised staff, for the equipment and personnel of expeditions, for the travelling expenses of the members of the Committee for the Study of Locust Biology, shall, on the recommendation of the Committee and by decision of the Governor General of Algeria, be taken from the competition fund managed by the Experiment Garden of Hamma ;

(4) That in order to secure the continuity of the research work already initiated which will require an annual expenditure of about 800,000 francs, each

of the Governments of French Africa shall make an annual contribution, so long as may be required, to the funds of the Experiment Garden and on behalf of the Competition Fund, calculated in proportion to the size of its budget so as to make up a total of 800,000 francs'.

## LEGISLATIVE AND ADMINISTRATIVE MEASURES

**Algeria (1).** — By Governoratorial Decree of 13 December 1932 the importation into Algeria of potatoes, tomatoes and eggplants grown in France may take place only by the ports open to importation of plants and in which there is a Crop Protection official.

These products, whatever be their origin, provenance and purpose (seed or consumption), will on arrival be submitted to a sanitary inspection, all packages being opened at the expense and at the risk of the consignee.

The above-named products must be free from soil and plant débris and enclosed in clean and sound packings.

The consignments must be accompanied by a trade invoice if they come from an establishment under State control and if not by a declaration from the consignor, in either case indicating exactly the names and addresses of the consignor and consignee, the number, weight and marks of the packages, the varieties of the products, the communes and departments in which they were grown and the date of consignment.

Potatoes, tomatoes and eggplants coming from territories of France not included in the official list of zones infected with Colorado beetle [*Leptinotarsa decemlineata*] or the zones of protection may enter Algeria at any season.

The above-named products coming from territories included in the infected or protection zones may be sent to destinations in Algeria only during the so-called winter period, commencing 1 October of each year and ending 15 May of the following year, these extreme dates being modifiable by Decree of the Governor General.

Consignments not conforming with the conditions prescribed by the present Decree will be returned or destroyed according to the wish and at the expense of the persons concerned by the Customs Service

All previous regulations not conforming with the present Decree are annulled.

**Germany (Thuringia) (2).** — By Decree No. 201 of 28 December 1932 concerning the control of elm disease (*Graphium Ulmi*) any occupier of land who shall observe that elms growing on his land show symptoms of this disease, such as wilting or sudden yellowing of the foliage on branches or whole trees, or any other person who shall become aware of the outbreak of this disease, is required to notify within a week the authority of the Commune concerned. The Communal

(1) Communication from the official correspondent of the Institute, Mr M. DELASSUS, Chief of the Crop Protection Service, Government General of Algeria, Algiers.

(2) Communication from the Biologische Reichsanstalt für Land- und Forstwirtschaft, Berlin - Dahlem, official correspondent of the Institute.

authority will inform the higher authority who will have the elms examined by the Central Station for Plant Protection of Jena.

The occupier of the land must allow this examination by the experts and put at their disposal any parts of the trees that they may require. The occupier must, in accordance with the severity of the attack and the instructions of the Station for Plant Protection, cut back the infected branches or fell the trees found to be infected. If the trees are lopped the cut surfaces must be coated with tar and the removed branches must be destroyed with fire.

Felled trees must have the bark removed and burnt and the infected branches must also be burnt. The timber must be used as soon as possible. The stumps of felled trees must be grubbed up or, in cases in which this does not seem practicable, they must be coated with tar or carbolineum. New shoots which develop later must be destroyed each year.

The regional authority must communicate to the competent forest authority the instructions prescribed to the occupier of the land.

**Chile.** — By Decree Law No. 147 of 6 July 1932 lead arsenate and certain oils intended for the protection of plants and entering on account of the Institute of Agricultural Credit are exempt from custom duties. (*Deutsches Handels-Archiv*, Berlin 1932, 86. Jahrg., 2. Dezemberheft, S. 2756).

**Spain.** — A Ministerial 'Orden' of 10 December 1932 contains enactments relating to applications for authorisation for exporting dried fruits and vegetables to France.

The regulations established by previous enactments of the Ministry of Agriculture, Industry and Commerce regulating the exportation of fruits and fresh vegetables to France remain unchanged in all that is not expressly altered or modified by the present 'Orden'. (*Gaceta de Madrid*, Madrid, 11 diciembre 1932, año CCLXXI, tomo IV, núm. 346, págs. 1809 a 1811).

\* \* By a Law of 20 December 1932 a supplementary grant of 100,000 'pesetas' has been allowed for the purpose of controlling locusts in the provinces of Santa Cruz de Tenerife and Las Palmas. (*Gaceta de Madrid*, Madrid, 23 diciembre 1932, año CCLXXI, tomo IV, núm. 358, pág. 2058)

**France.** — A Ministerial Decree of 20 December 1932 indicates the zones declared infested with the Colorado beetle [*Leptinotarsa decemlineata*] and the zones of protection in the following Departments: — Ain, Allier, Indre-et-Loire, Jura, Landes, Loire-Inférieure, Loiret, Loir-et-Cher, Lot, Lot-et-Garonne, Maine-et-Loire, Manche, Mayenne, Morbihan, Orne, Puy-de-Dôme, Basses-Pyrénées, Hautes-Pyrénées, Saône-et-Loire, Sarthe, Seine-et-Oise, Deux-Sèvres, Tarn, Tarn-et-Garonne, Vendée, Vienne, Haute-Vienne. (*Journal Officiel de la République Française*, Paris, 4 février 1933, LXV<sup>ème</sup> année, n° 30, p. 1220-1226).

**Hungary** (1). — The Decree No. 49,000/1932-VII-3, published 18 August 1932, contains regulations relating to the national organisation for plant protection, which came into force on 1 October 1932.

(1) From a communication from the Royal Hungarian Legation in Italy to the International Institute of Agriculture

The Royal Hungarian Plant Protection Service includes the following:—

- (1) The Council for Plant Protection.
- (2) The Royal Hungarian Institute for experimental research concerned with plant protection, which includes three Sections (Phytopathology Section, Entomology Section and Phytobiological Chemistry Section).
- (3) The Central Organisation for Plant Protection, namely:—
  - (a) the Plant Protection Bureau and
  - (b) the Practical Plant Protection Service organised within the Bureau
- (4) The provincial organisations for plant protection, namely:—
  - (a) the Plant Protection Centres existing in the various districts of the country;
  - (b) the persons in charge of local plant protection (landowners who have received the necessary instruction)

The high administrative and scientific control of the organisations under the Royal Hungarian Plant Protection Service are in the hands of the competent Section of the Royal Hungarian Ministry of Agriculture (at present Section VII-3 'Rural Police')

This Decree is accompanied by a list and facsimile signatures of the specialised officials appointed to sign the certificates issued by the Royal Hungarian Plant Protection Service

**Italy.** — By Ministerial Decree of 20 December 1932, which came into force on 1 March 1933, importation and transit of the following plants and plant parts are forbidden:

(a) Plants and fruits of Cactaceae coming from any country whatever, in view of the risk of introducing insects, fungi and bacteria harmful to the prickly pear [*Opuntia Ficus-indica*].

(b) Plants and parts of plants belonging to the Coniferous genera *Abies*, *Picea*, *Pinus*, *Pseudotsuga* and *Tsuga*.

The importation of plants and parts of plants belonging to other Coniferous genera is authorised subject to the presentation of a certificate issued by the phytopathological authorities of the country of origin, written in Italian or French, stating that the plants or plant parts in the consignment are free from diseases and dangerous parasites and, in particular, from *Rhabdochline Pseudotsugae*.

The certificate must, further, indicate the origin of the merchandise, the name of the species to which belong the products consigned and all the data necessary for identifying the consignment. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 14 febbraio 1933, anno 74<sup>o</sup>, n. 37, p. 611)

\* \* \* The Ministerial Circular No. 44609 of 21 December 1932 addressed to the Directors of the Royal Phytopathological Observatories calls attention to the regulations of the Ministerial Decree of 3 March 1927 [see this *Bulletin*, 1927, No. 3, pp. 41-43] with a view to the most rigorous testing of seed of forage crops (lucerne, clover, etc.) for importation into Italy. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 1<sup>o</sup> febbraio 1933, anno V, n. 3, pp. 342-343).

\* \* By Law No. 1871 of 22 December 1932 the Royal Decree Law No. 913 of 20 June 1932 [see this *Bulletin*, 1932, No. 11, p. 185] modifying article 31 of the Law No. 987 of 18 June 1931 containing enactments relating to the protection of cultivated plants and agricultural products against diseases and pests and to the services relating thereto, has been made Law. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 31 gennaio 1933, anno 74<sup>o</sup>, n. 25, p. 407).

\* \* The Law No. 1933 of 22 December 1932 carries modifications of article 19 of the Law No. 987 of 18 June 1931 [see this *Bulletin*, 1931, No. 9, p. 166] containing enactments relating to the protection of cultivated plants and agricultural products against diseases and pests and to the services relating thereto.

In consequence of this modification the annual contribution to be paid by each member of the Consortiums (Syndicates) for the protection, improvement and increase of crops, as also any expenses incurred in effecting the necessary operations and defence measures will be payable by the landowners, who will have the right to exact the refunding of their expenditure by the tenants, share tenants or other person concerned in any way in the farm, in the measure, in the cases and with the restrictions that shall be fixed in the Regulations for the application of the Law No. 897 of 18 June 1931, the system of farming the land being taken into account. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 7 febbraio 1933, anno 74<sup>o</sup>, n. 31, p. 510)

**Turkey.** — By Circular of the Direction General of Customs Houses, published 16 October 1932, copper sulphate and sulphur intended for use in the protection of plants may be imported duty-free on condition that the products have been previously examined by the Customs House chemist and found to conform to the following requirements:—

The copper sulphate must have a purity of 98-99 %, and be composed of large crystals, without many broken crystals, and must not have suffered from exposure to the air. The colour must be clear blue without green stains.

The sulphur must contain only little foreign matter and not more than 5 % of ash. The fineness must be between 60 and 70<sup>o</sup> Chancel and it must be soluble in carbon disulphide. (*Deutsches Handels-Archiv*, Berlin 1933, 87. Jahrg., 1. Januarheft, S. 92-93).

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[*Olpidium Viciae*, *O. Trifolii*]

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MALENOTTI, ETTORE. Polisolfuro di calcio, bolla del pesco e cocciniglie. *Il Gazzettino Agricolo*, Padova, 1933, anno XI, n. 6, p. 2.

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[*Cronartium ribicola* on *Ribes Roezli* and *R. nevadense* associated with *Pinus Lambertiana* in California].

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[*Tilletia Triticis*, *T. levis*].

NICOLAS, G., et AGGÉRY, B. Remarques sur *Gloeosporium lagenarium* (Passer.) Sacc. et Roum. et *Colletotrichum oligochaetum* Cav. et sur leur mode de conservation. *Comptes rendus des séances de la Société de Biologie et de ses filiales et associées*, Paris, 1933, tome CXII, n° 2, pp. 125-126.

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[*Sclerotinia sclerotiorum* on *Antirrhinum*].

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TOPI, MARIO. La lotta antiacridica nel 1932 ed i suoi insegnamenti. *L'Italia Agricola*, Roma, 1932, anno 69, n. 12, pp. 1092-1099, figg. 1-3.

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[*Actinomyces Scabies*].

TU, C. Notes on diseases of economic plants in South China. *Lingnan Science Journal*, Canton, China, 1932, Vol. 11, No. 4, pp. 489-504, pls. 8-17 Literature cited, pp. 503-504.

[List of diseases observed on *Brassica campestris*, *Canarium album*, *Carica Papaya*, *Capsicum annuum*, *Citrus* spp., *Hordeum vulgare*, *Lactuca sativa*, *Lycopersicum esculentum*, *Morus alba*, *Oryza sativa*, *Pyrus communis*, *Solanum Melongena*, *S. tuberosum*, *Triticum vulgare*].

UNAMUNO, LUIS M. Notas micológicas. *Boletín de la Sociedad Española de Historia Natural*, Madrid, 1932, tomo XXXII, núm. 9, págs. 439 a 448, fig. 1

[List of 32 species of fungi collected in Spain. The Latin diagnosis is given of *Didymella Mutisiana* n. sp. on *Ononis spinosa*].

VACIRCA, MARIO. Manua e degli insetti dannosi alle piante coltivate e ai loro prodotti. Roma, Casa Editrice Pinciana, [1932], 180 pp.

[Manual for farmers].

VAN PORTEREN, N. De Colorádokever. *Tijdschrift over Plantenziekten*, Wageningen 1932, 38e jaarg, 12e aflev, blz [253]-276, pl XXI-XXII

[*Leptinotarsa decemlineata*].

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VIENNOT-BOURGIN, G. Les effets secondaires de la carie. Dommages causés aux pailles et au feuillage. *Comptes rendus hebdomadaires des séances de l'Académie d'Agriculture de France*, Paris, 1932, tome XVIII, n° 34, p. 1144-1146

[*Tilletia Tritic*].

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[*Oidium monilioides* on 'Mentana' wheat during the winter].

VOGLINO, PIERO. Ricerche sulla fusariosidegliastrici della Cina. *Annali della Regia Accademia di Agricoltura di Torino*, Torino, 1932, Vol. LXXV, pp. 5-22, figg. 1-10 Bibliografia, pp. 21-22.

[*Fusarium conglutinans* var. *Callistephi* on *Callistephus chinensis*. The writer observes that *F. conglutinans* var. *Callistephi* shows a number of characteristics clearly distinct from those of *F. conglutinans*. He therefore considers it would be advisable to keep the two forms distinct, calling *F. conglutinans* the species which causes the collar rot of cabbages, and *F. Callistephi* the cause of the Fusarium wilt of China asters].

VOUKASSOVITCH, P. Contribution à l'étude des parasites et hyperparasites d'*Hyponomeuta malinellus* Zell. *Revue de Zoologie Agricole et Appliquée*, Bordeaux, 1932, 31<sup>e</sup> année, n° 7, p. 108-120, fig. 12-17, pl. II; n° 8, pp. 124-136, fig. 18-20; n° 9, pp. 137-145, fig. 21-24; n° 10, pp. 153-160, fig. 25, pl. III; n° 11, pp. 174-183, fig. 26-29.

[The parasites found by the writer in Jugoslavia are :— *Herpestomus brunnei-cornis*, *Angitia armillata*, *Pimpla examinatore*, *P. maculator*, *Agrypon anxium*, *Brachymeria minuta*, *Agemaspis fuscicollis*, *Tetrastichus crassinervis*, *Dischochaeta cognata*, *Agria mamillata*. The hyperparasites are :— *Tetrastichus crassinervis*, *Mesochorus confusus*, *Hemiteles scabriculus*, *Hemiteles* sp., *Pteromalus variabilis*, *Elasmus flabellatus*, *Monodontomerus aereus*].

WANG, DZUNG TSIN. Quelques observations sur l'*Ustilago violacea* (Pers.) Fuckel. *Comptes rendus hebdomadaires des séances de l'Académie des Sciences*, Paris, 1932, tome 195, n° 26, p. 1417-1418.

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[*Stemphylium Solani*].

WILLE, J. El gorgojo de la chupadera del algodón y otras plagas agrícolas del Dto. de Piura. Informe sobre el viaje de inspección de los algodones en el valle de Piura, efectuado del 30 de agosto al 11 de setiembre de 1932. *La Vida Agrícola* Lima, Perú, 1932, vol. IX, no. 109, págs. 749 a 762, figs. 1-12.

[*Gasterocercodes gossypii*, *Anthonomus vestitus*, *Dysdercus ruficollis*, *Hemichionaspis minor*, *Thrips* sp., *Iphis* sp., *Tetranychus* sp., 'raíz podrida' (disease of unknown origin) on cotton; *Diatraea saccharalis* on rice and maize, *Laphygma frugiperda* on maize; *Selenaspidus articulatus* on citrus trees; *Aspidiotus* sp. on mangoes; caterpillars of *Noctuidae* on carob trees, *Terya purchasi* on various ornamental plants].

WINKELMANN, A. Versuche zur Bekämpfung der Geistenflugbrandes mit chemischen Mitteln. *Fortschritte der Landwirtschaft*, Berlin und Wien 1932, 7. Jahrg. Heft 21, S. 535-536. Literatur, S. 536.

[*Ustilago nuda*].

# INTERNATIONAL BULLETIN OF PLANT PROTECTION

## DISCOVERIES AND CURRENT EVENTS \*

### French North Africa: Desert Locust (*Schistocerca gregaria*) (1).

#### ALGERIA.

- 1 February 1933 — A large swarm coming from the S. E. passed between Brézina and Sidr el Hadj (80 km S. of Géryville) flying N. A swarm coming from the W. settled 40 km S. E. of Brézina (Géryville) and departed flying E.
- 3       "       " — A very large red swarm coming from the S. W. settled at Sfissifa (Aïn Sefra).  
A large red swarm passed 5 km S. of Ghardaïa over the El-Goléa track flying E. S. E.
- 4       "       " — Two very large red swarms coming from the W. passed Aïn Sefra flying E. Part settled at the Dunes.
- 5       "       " — A large swarm settled in the region of Taoussera, Haddjerat Toual, Mokta Déli, Souiga (Méchéria). Flew away again on 6 February towards the N. E.
- 6       "       " — A very large red and yellow swarm coming from the S. E. settled at Metlili (Ghardaïa). Departed on the morning of the 7th flying N. W.  
A very large swarm coming from the W. passed at 9 a. m. over the region of Naama (30 km S. of Méchéria) flying N. E.  
A large swarm coming from the N. W. passed at 3 p. m. over El Magroussa, 16 km from the station of Mokta Déli (Méchéria), flying E.  
A red swarm 4 km in length coming from the W. settled at Ksour Arbaouat (60 km S. W. of Géryville). Flew away again on the morning of the 7th towards the E.
- 7       "       " — A large red and yellow swarm coming from the S. settled at Metlili at 6 p. m. (30 km S. of Ghardaïa). Departed on the 8th in the morning, flying N.  
A very large red and yellow swarm coming from the W. settled in the Oued Sebseb (45 km S. of Ghardaïa).

\* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.



- 7 February 1933 — A large pink swarm coming from the E. passed Taghit (Colomb-Béchar) at 1 p. m. flying W.
- 11       "       " — A relatively large red and yellow swarm passed Ghardaïa flying N.  
                   A very large red swarm coming from the S. W. passed Naama (Aïn Sefra) at mid-day, then Oued Kerba, flying N. N. E.  
                   A large red swarm coming from the S. S. E. settled at 5 p. m. 15 km from Bouktoub (95 km N. W. of Géryville). Departed on 12 February at 9 a. m. flying N. N. E.
- 12       "       " — A large red swarm coming from the E. settled between El Berd, Zaouiét Riab and El Arfiâne (Touggourt). Flew away again in the morning of the 13th towards the S. E.
- 13       "       " — A very large red and yellow swarm coming from the W. settled in the afternoon at Hassi Bounouara (15 km N. W. of Ghardaïa). Copulation. Laying reported from the 17th.  
                   A large pink swarm coming from the S. W. settled at 4 p. m. in the Chott Chergui, 3 km S. E. of the Kreider (Saïda), covering 1000 hectares.  
                   A large red swarm coming from the S. settled at Témacine Tamelrat (Touggourt). Departed again on the 14th flying W.  
                   A pink swarm of  $1 \times 4$  km coming from Morocco settled in the douar Beni bou Saïd (Marnia). Departed on the 15th flying towards the Beni bou Hamidève (Morocco, S. of Oudjda)
- 14       "       " — A swarm passed Garet Chouf (25 km N. E. of Ouargla)  
                   A small red swarm coming from the W. (from Sidi Boubekeur, Morocco, and Beni bou Saïd) settled towards mid-day in the region of Missiouen, near Marabout de Sidi Abdallah, and at Ghabet Fradsa, douar Ouled Nehar Gheraba, 70 km from Sebdou. Departed on the 15th flying towards Beni bou Saïd.  
                   A very large swarm (50 sq. km) coming from the S. W. settled in the evening at El Remel (45 km S. S. E. of Laghouat. Destroyed by rain and frost.
- 15       "       " — A large pink swarm reported at Kralfallah (Saïda) departed flying E. and settled on 19 February in the region of Tafraoua (Saïda).  
                   A sparse red swarm coming from the W. (from Mehaïa, Morocco) settled at 3 p. m. at Sidi Abdallah, douar Ouled Nehar Gheraba (Sebdou).  
                   A large swarm coming from the S. E. settled in the E. and N. of the Oasis of El Oued and flew away towards the N. E.

- 15 February 1933 — Laying reported at Hassi Klabia (100 km N. E. of El Oued).
- 16       "       "     --- A rather large pink swarm coming from the S. W. settled in the region of Hassi Guernina, Timbrahim and between Bouktoub and the Kreider (Saïda).
- 18       "       "     — A medium-sized red and yellow swarm covering 1 km  $\times$  400 m reported in the Oued Ourirlon (18 km N. E. of Ghardaïa). Copulation.  
                     A small swarm reported in the Oued Nimel (14 km N. E. of Ghardaïa).  
                     A small swarm reported in the ravine of Zouil (10 km N. E. of Ghardaïa).  
                     A small red and yellow swarm coming from the W. settled at Ouled Chalaf (18 km N. W. of Metlili, Ghardaïa) and laid scattered eggs over 10  $\times$  4 km. Departed on 20 February towards the N.  
                     A swarm of 3  $\times$  4 km passed Tadjerouna (100 km S. of Aflou flying E.
- 19       "       "     --- A large yellow swarm coming from the W. passed at 2 p. m. 4 km N. W. of Ghardaïa, flying E. carried by a strong wind.  
                     A large red and yellow swarm coming from the W. settled at Dekhalet Brahini (35 km S. S. E. of Ghardaïa) and laid sparsely over 4  $\times$  2 km. Departed again on 21st flying N.
- 20       "       "     — From the 20th to the 22nd large swarms settled at Bir Boutina, Djerch, Djerara, Chott el Ghela and Bir Bousbia of the douar Negrine Ferkane (Tébessa). Some copulation. Flew S. with a strong N. wind.  
                     A large swarm settled in the region of El Feïdh, S. of Zeribet El Oued (Biskra). Part departed on the 21st flying E.
- 21       "       "     -- A small red and yellow swarm settled 2 km N. W. of the Ksar de Metlili (30 km S. S. W. of Ghardaïa). Flew away N. on the 22nd.
- 22       "       "     — A large red swarm (7 to 8 km) coming from the S. W. settled in the night at Kilane and Ras Laanag (32 km E. of Laghouat). Departed on the 23rd flying S. E.  
                     A small swarm formed partly of the locusts reported on 13 February at Hassi Nounouara settled at 1 p. m. at Loubira (6 km N. W. of Ghardaïa). Copulation.
- 26       "       "     — A large red and yellow swarm coming from the N. settled at El Berd, Caïda de Djamaa (Touggourt) and laid. Departed on the 27th flying E.  
                     A somewhat large red and yellow swarm coming from the S. settled at 4 p. m. at El Atteuf (10 km E. S. E.

of Ghardaïa). Departed on the 27th at 10 a. m. towards the W.

- 26 February 1933 — A small swarm passed at 4 p. m. over the douar of Touririne (Montagnac) flying W. (Morocco).  
 27     "     "     — Laying reported at various points 25 km S. of Négrine over about 3000 hectares.  
 28     "     "     — Laying since 16 February reported at Aïn Sahan Haoud Haran, Haoud Lazergue, Oued en N'sa (70 km N. of Ouargla).

A certain amount of laying recorded 3 km N. N. W. of the Daïa ben Dahoua (13 km N. N. W. of Ghardaïa).

#### TUNISIA.

- 1 February 1933 — A small red swarm coming from the W. passed Bir ben Grira (49 km S. of Kebili) flying E.  
 3     "     "     — A large swarm settled at 6 p. m. 32 km S. E. of Nefta on the Algerian frontier.  
 5     "     "     — A red swarm coming from the W. settled at 6 p. m. at Narklet Mengout (57 km S. E. of Tozeur). Departed on 10 February at 7.30 a. m. flying S. E.  
 8     "     "     — A dark red and yellow swarm coming from the W. settled at 3 p. m. at Bir Souameck (40 km E. of Tozeur). Copulation. Laying began on 10 February.  
 9     "     "     — A dark red swarm 4 km in length coming from the W. settled at the Oued Bréga on the track from Remada (62 km S. of Tataouine). Flew away towards the E.  
 12    "     "     — A swarm reported on the 9th at the Oued Bréga passed Kzczem El Kelb (50 km S. of Tataouine) flying towards the territory of Ben Gardane.  
 13    "     "     — A sparse swarm of 400 × 500 m coming from the S. W. passed Cheikkat Oulad Mahdi (30 km S. W. of Médenine) flying N. E.  
 14    "     "     — A yellow swarm coming from the N. passed Sidi Toui (50 km S. of Ben Gardane) flying S.  
 15    "     "     — A large swarm coming from the N. W. passed Oued Is Sedar (50 km E. S. E. of Médenine) flying S. E.  
 16    "     "     — A small swarm coming from the S. E. reported at Médenine.

#### MOROCCO.

- 2 February 1933 — A swarm settled in the evening at Damar Tansoult (80 km E. of Marrakech). Departed on the 3rd flying N. W.  
 A sparse swarm coming from the S. reported in the upper valley of the R'dat, passed on the 3rd over Enzel (Marrakech).

- 3 February 1533. — A large red swarm,  $25 \times 15$  km, coming from the S. passed between Oglat Mengoub and Oglat Chebkat Berguent flying E.  
A large swarm coming from the W. settled at Gourpama at Toulal. Flew away again on the 4th towards the N. W. (in the direction of Aït Mesrouh).  
A large swarm of  $10 \times 15$  km coming from the W. settled at 11 a. m. at the Zaoura de Talsint. Departed at 1 p. m. flying E. N. E.
- 6       "       "       — A yellow swarm,  $4 \times 3$  km, settled on the Ida ou Kazou (E. of Tamanar).
- 7       "       "       — A swarm reported on 3 February at Berguent separated into two parts, one of which settled in the region of Tiouli (near Debdou) and the other flew E. (towards Sebdu and Mecheria, Algeria).  
A pink swarm,  $2 \times 1.5$  km, settled in the evening to the S. of Demnat.
- 9       "       "       — A pink swarm,  $4 \times 2$  km, coming from the S. E. settled at Derb bel Bachir (S. of Chichaoua)  
A large pink swarm of  $12 \times 6$  km passed at 3 p. m. 10 km S. of El Aïoun (region of Oudjda) flying W., then settled in the evening near El Oglat (N. of Taucherfi). Departed on 10 February at 10 a. m. flying W
- 10       "       "       A yellow swarm,  $2 \times 2$  km, coming from the S. settled on the Ida ou Bouzia at Tidli (E. of Tamanar). Flew away again on the 11th towards the N. (direction of Ait Zeltem).  
A large swarm coming from the S. W. settled in the evening at Taucherfi and around El Aïoun (region of Oudjda) Departed on the 11th at 2 p. m. flying N. E.
- 11       "       "       — A pink swarm 2 km in length passed Hassi Bhraim (S. of Igberim) flying N.  
A pink swarm settled at Tillouguet Naït Izza (region of Tadla) ; flew away N. up the Assif Nelloul.
- 12       "       "       — A pink swarm, 2 km  $\times$  400 m, coming from the E. settled on Amougueur (region of the frontiers) in the night.
- 13       "       "       — A swarm reported on the 7th as flying towards Sebdu split into two parts, one of which flew in the direction of El Aricha (Algeria) and the other settled near Martimprey, 20 km from the Algeria-Morocco frontier.
- 14       "       "       — A pink swarm of 3 km, coming from the E., settled on the division of Bessara (S. E. of Berkane). Departed on the 15th flying S. E.  
A pink swarm coming from the S. settled S. of Demnat (region of Marrakech).

- 15 February 1933 — A pink swarm  $15 \times 4$  km settled at Bouhouria (S. of Berkane) and then flew S. E.
- 22       "       " — A small red swarm settled on Aït Taguella (region of Marrakech), then flew away and passed above Azilal flying N.
- 28       "       " — A red swarm,  $20 \times 1$  km, coming from the S. E. settled at 4 p. m. near Bouhouria (35 km W. of Oudjda). Departed on 1 March about 2 p. m. and settled, part in the direction of Naima, and part towards Oudjda.

**French West Africa: Desert Locust (*Schistocerca gregaria*) in Senegal (1).**

- 21 January 1933 — A pink swarm coming from the N. E. passed over Kébémir (Circle of Louga) at  $16^{\circ} 27'$  Long. W. and  $15^{\circ} 23'$  N. flying S. W. carried by a N. E. wind.

**England and Wales: New and Interesting Phytopathological Records for the Year 1932 (2).**

(a) Fungi parasitic on cultivated plants recognised in England and Wales during the year 1932 and believed not to have been recorded there previously :-

*Oplidium Agrostidis* Sampson (sp. nov.), parasitising the roots of *Agrostis stolonifera*.

*Uredo Fuchsiae* Arth. & Holw. First observed on leaves of garden Fuchsia (var. 'Golden Treasure') in a nursery glass-house in Cardiff in January. Seen also in April at Swansea. This Rust appears to have been recorded previously only from Guatemala. It strongly resembles *Pucciniastrum Circaceae*, which is rather common in Britain, in its uredo-stage, on *C. intermedia* and *C. luteitiana*.

*Diaporthe umbrina* Jenkins. Causing 'Brown Canker' of roses.

*Sphacloma Rosarum* (Pass.) Jenkins, on roses.

*Ceratophorum setosum* Kirchn. Causing losses in garden Lupins, especially *L. cytisoides*.

(b) New Virus Diseases.

The presence of the so-called 'Spotted Wilt' disease of tomatoes was definitely detected in 1932, whilst three new virus diseases of *Hyoscyamus* were discovered and described by M. A. Hamilton. A probable Virus disease of Zonal Pelargoniums was also recorded and described.

(c) Miscellaneous.

*Gibberella Saubinetii* (Mont.) Sacc. was noted for the first time naturally occurring on wheat in England in 1932.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.

(2) Communication from the Ministry of Agriculture and Fisheries, London, official correspondent of the Institute.

As a result of the prompt measures taken to eradicate the Rust on Dew-berry plants (*Kunkelia nitens* [Schw.] Arth.) imported from the U. S. A. and referred to in a previous communication [see this *Bulletin*, 1932, No. 2. p. 21], the disease did not reappear in 1932.

### Egypt: Locust Report (1).

(1) No further information was received about locusts observed in January 1933 at Gilf Kebir in the Lybian Desert [see this *Bulletin*, 1933, No. 3, p. 53].

Large numbers of green locusts, most probably of *Locusta*, were reported early this month from a place about 100 kilometres west of Owenat, Lat. 21° 35' Long. 25°.

(2) By the middle of February the trip to Gebel Elba in the South Eastern Desert, referred to in last month's report [see this *Bulletin*, 1933, No. 3, p. 53] was accomplished. Only a few specimens of *Schistocerca gregaria* of the solitary phase were met with, although the wadis running in some parts of the country and especially round Elba were found to be green with vegetation and form suitable breeding places.

(3) On February 27th reports were received from both Palestine and Sinai Governorate that big swarms of locusts were observed at Haikl in the Hedjaz near the Gulf of Akaba moving towards Transjordanian.

### Eritrea: Tropical Migratory Locust (*Locusta migratoria migratorioides*) (2).

During January and February 1933 no swarms of the tropical migratory locust made their appearance in the Colony.

### India: New Diseases reported during the Year 1932 (3).

PUSA (Dr. W. M c R a e, Imperial Mycologist, Imperial Institute of Agricultural Research).

<i>Saccharum officinarum</i> ....	<i>Rhizoctonia bataticola</i> (Taub.) Bult.
	<i>Phytophthora rubrilineans</i> Lee et al. (Red stripe leaf disease).
<i>Panicum trypheron</i> .....	<i>Sclerospora</i> sp.
<i>Nicotiana tabacum</i> .....	<i>Alternaria</i> sp.
	<i>Sclerotinia</i> sp.
<i>Hibiscus sabdariffa</i> .....	<i>Fusarium</i> sp.

(1) Communication from the Chief Plant Pathologist, Plant Protection Section, Ministry of Agriculture, Giza, Egypt to the International Institute of Agriculture.

(2) Communication from the official correspondent of the Institute, Dr. Rolando GUIDOTTI, Head of the Agricultural Office of Eritrea, transmitted by the Government of the Colony.

(3) Communication from the official correspondent of the Institute, Mr. W. McRAE, M. A., D. Sc., F. L. S., Imperial Mycologist, Imperial Institute of Agricultural Research, Pusa, Bihar, India.

BOMBAY PRESIDENCY (Reported by Dr. B. N. U p p a l, Plant Pathologist).

*Ficus benghalensis*..... *Uredo fici* (*Cerotelium fici* [Cast.] Arth.).

*Helianthus annuus* ..... *Puccinia helianthi* Schwr.

*Gossypium herbaceum* .... *Sclerotium rolfsii*.

*Paspalum scrobiculatum*... *Striga* sp.

A race of bacteriophage specific against *Pseudomonas citri* Hasse has been isolated from leaves of citrus affected by citrus canker.

BENGAL (Reported by Mr. G. S h a r n g a p a n i, Economic Botanist).

A disease of Cardamom (*Amomum subulatum*) from Darjeeling is reported. The bud at the top becomes twisted. The plant gives fruits in the first year but in the second year it becomes bunchy from the rhizome and flowers but no fruits are produced. Later on the inflorescence along with the rhizome become blackened. A species of *Rhizoctonia* was isolated.

BORADA STATE (Reported by Mr. S a n e).

*Pennisetum typhoides*... *Teichospora* sp.

CINNAMARA (Reported by Mr. A. C T u n s t a l l, Mycologist, Indian Tea Association)

The *Colletotrichum* present on the tea branches differs from that found on the leaves. The *Glomerella* form of the fungus both in the field and in culture also differs from that associated with *Colletotrichum camelliae*. The branch-form of *Colletotrichum* and *Glomerella* has not yet been observed on the leaves but the leaf-form is occasionally found on the branches.

LAHORE (Reported by Dr. H. H. C h o u d h u r i, Professor of Botany, Punjab University).

Diseases of Pomegranates (*Punica granatum*) caused by *Pyrenochaeta* sp and *Amphichaeta* sp have been observed, the former on mature plants and the latter on nursery plants.

Reversion to leaf forms in inflorescences of cocoanut received from Travancore was noticed. Trees once showing reversion, never more produce fruits.

CALCUTTA (Reported by Dr. S. S. B o s e, Professor of Botany, Carmichael Medical College).

*Polyporus ostreiformis* Berk. has been observed on Areca palm, apparently causing much damage in Calcutta.

## Southern Rhodesia: Second Locust Invasion 1932 (1).

### 1. *Nomadacris septemfasciata*.

Swarms of the red locust commenced to invade Southern Rhodesia late in November 1932, the first report being from Matetsi in the Wankie District on 29th. It is not known whether the first swarms came from the Bechuanaland

(1) Communication from the official correspondent of the Institute, Mr. R. W. JACK, F. E. S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

Protectorate or from Northern Rhodesia, but some later swarms are known to have come from the north. From early reports received the general trend of direction appeared to be S.E. to S.W. but it soon became evident that the swarms were circling. Early in the month further swarms crossed from the north into the Lomagundi District, and on 12th a swarm, believed to have come from Portuguese territory, appeared in the Inyanga District. It seems likely that swarms entered the colony along the whole northern boundary, and possibly the northern sections of the eastern and western boundaries.

Towards the end of the month egg-laying became fairly general throughout the colony. The districts invaded, egg-laying being reported where stated, are as follows: — Wankie (eggs), Nyamandhlovu (eggs), Bulalima-Mangwe (eggs), Matobo, Bulawayo, Umzingwane, Insiza (eggs), Belingwe (eggs), Gwanda, Chibi (eggs), Victoria, Selukwe, Gwelo (eggs), Bubi, Sebungwe, Hartley (eggs), Lomagundi (eggs), Mazoe (eggs) Salisbury (eggs), Mrewa, Mtoko, Inyanga, Makoni, Marandellas (eggs), Charter (eggs), Bikita (eggs), Ndanga (eggs).

No hoppers of this species were reported during the month.

## 2 *Locusta migratoria migratorioides*.

A few swarms of the tropical migratory locust invaded the Darwin District from the north apparently late in November 1932, although the first report was made on 4th December. Egg-laying commenced at once and hoppers appeared in the Zambesi Valley on 15th. Specimens of fliers from a few swarms from the Mazoe District, mainly red locusts, included specimens of migratory locusts.

It has been difficult to trace the tropical migratory locust, as it has been to some extent confused with the red species. Specimens have been received from the district of Darwin, Mazoe, Mrewa, and Gwelo, and it is suspected that the species is present in Hartley and Mtoko. Hoppers have appeared in Darwin, Mazoe, and Mrewa. A number of hopper swarms have been successfully dealt with by farmers and by the Government. Beating with brushwood is stated to have proved successful in the Mazoe District where eggs have hatched on cultivated lands.

## 3 Damage.

Thousands of acres of maize have been severely damaged by the fliers, but, probably owing to the cloudy weather, most of the crops are apparently recovering.

## 4 Locust Campaign.

The Government has organised a campaign for the destruction of hoppers and is responsible for hoppers on crown lands and in native reserves. In settled areas the owners are responsible for the destruction of hoppers, free poison being issued, and pumps being loaned to those responsible.



### Tripolitania : Invasion of Desert Locust (*Schistocerca gregaria*) (1).

On 23 February 1933 a swarm covering about a kilometre and coming from the S. was observed in the vicinity of El Hoblia in the territory of the western zone ; it settled but caused no damage. A further swarm was reported in the territory of Nalut.

The invasion of desert locust coming from southern Tunisia, and arriving at first in isolated swarms, extended over the whole of the western territory, with particular intensity in the south-western region. Numbers of dense swarms were reported at Zuara, Giosc, Nalut, Giado, Agelat and Sorman. The direction of flight was always from S. W. to N. E. The largest swarm, which was reported on 4 March 1933 to the S. E. of Sorman, had a front of 2 km and a length of 15 km. Up to the present damage has been in isolated places and not serious, except in the locality of El Berga where the grain crops were attacked. The zones of the European plantations have so far escaped.

Control by capture and destruction of adults has been started everywhere in collaboration with the natives of the territories affected.

The natives have begun to use the locust on a large scale for food and in certain localities locusts have fetched higher prices than barley.

## LEGISLATIVE AND ADMINISTRATIVE MEASURES

**France.** — By Ministerial Decree of 5 January 1933 the following establishments dependent on the Agricultural Research Institute become centres of phytopathological research:—

- (1) North region. — Central Station of Plant Pathology, Versailles ;
  - (2) East region. — Station for Plant Improvement and Pathology, Colmar ;
  - (3) South-east region. — Agricultural Zoological Station, Saint-Genis-Laval (Rhône) ;
  - (4) Mediterranean region. — Station for Botany and Plant Pathology, Antibes ;
  - (5) Central region. — Station for Improvement of Main-Crop Plants, Clermont Ferrand ;
  - (6) South-west region. — Agricultural Zoological Station, Bordeaux ;
  - (7) West region — Station for Plant Improvement and Pathology, Rennes.
- (*Journal Officiel de la République Française*, Paris, 6 janvier 1933, LXV<sup>ème</sup> année, n° 5, p. 195).

\* \* \* By Decree of 21 January 1933 relating to the importation of plant products, the Decree of 14 October 1932 [see this *Bulletin*, 1932, No. 12, p. 206] is modified to the effect that modifications of the measures contained in article 1 of the Decrees of 18 April and 23 May 1932 may be granted as an

(1) Communication from the Government of Tripolitania, transmitted to the International Institute of Agriculture by the Italian Ministry of the Colonies.

exceptional and temporary measure by Decree of the Minister of Agriculture. (Ministère de l'Agriculture, Direction de l'Agriculture. *Bulletin de l'Office de Renseignements Agricoles*, Paris, 1<sup>er</sup> février 1933, année 1933, n° 3, p. 50).

\* \* By Ministerial Decree of 1 February 1933 the use of zinc phosphide for the destruction of mole crickets [*Gryllotalpa gryllotalpa (vulgaris)*] is authorised on the following conditions within the infested zones which are delimited by the Minister of Agriculture.

The destruction of mole crickets by means of zinc phosphide will be organised in each Department by Prefectorial Decree.

It will be carried out under the supervision of the mayor or his deputy by the Crop Protection Syndicate in accordance with the instructions given by the Plant Protection Service.

The preparation of the poisoned bait will be supervised by the Service for Inspection of Chemists, and will be carried out by the chemists in the conditions fixed in Art. 12 of the Decree of 14 September 1916.

The chemists may have the bait prepared under their control in the premises belonging to the Crop Protection Syndicates.

In such cases the Syndicates' orders for zinc phosphide must be endorsed by the chemists responsible for the preparation of poisoned bait.

Chemists and other persons are forbidden to sell to private individuals packets containing zinc phosphide and the substances required in the preparation of poisoned bait. (*Journal Officiel de la République Française*, Paris, 5 février 1933, L<sup>XV</sup><sup>ème</sup> année, n° 31, p. 1244-1245).

**Guadeloupe.** — By Decree of the Governor of Guadeloupe and its Dependencies, dated 19 July 1932, has been promulgated in the Colony the Decree of 8 March 1932 [see this *Bulletin*, 1932, No. 4, p. 57] forbidding the entry and transit of plants, plant parts and fruits capable of introducing into France the San José scale (*Aspidiotus perniciosus*). (*Journal Officiel de la Guadeloupe*, Basse-Terre, 28 juillet 1932, n° 35, p. 536-537).

**Italy.** — By Ministerial Decrees of 10, 14, 18 and 20 February 1933 obligatory provincial Consortiums (Syndicates) for the protection of the hemp crop have been formed in the provinces of Rovigo, Bologna, Ferrara, Naples, Cuneo, Modena and Turin. One of the responsibilities of the Syndicates will be the organisation of the control of diseases of hemp. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 24 febbraio 1933, anno 74<sup>o</sup>, n. 46, pp. 803-804 ; 25 febbraio 1933, n. 47, pp. 822-823 ; 6 marzo 1933, n. 54, pp. 929-930 ; 10 marzo 1933, n. 58, pp. 1001-1002 ; 13 marzo 1933, n. 60, pp. 1035-1036 ; 18 marzo 1933, n. 65, p. 1131).

\* \* By Ministerial Decree of 28 February 1933 the Communes of San Paolo Matese and Boiano in the province of Campobasso have been declared infected with grape phylloxera. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 17 marzo 1933, anno 74<sup>o</sup>, n. 64, p. 1107).

\* \* By Ministerial Decree of 8 March 1933 the control of the 'wheat bugs' (*Aelia acuminata*, *A. rostrata* and *Eurygaster maura*) has been made compulsory in the provinces of Verona, Mantua and Brescia and must be effected by collecting the insects by the hand appliances already in use.

The work of collecting the insects must be carried out by the persons farming the infested land at their own expense (1). \*

\* \* By Ministerial Decree of 15 March 1932 the control of cockchafers (*Melolontha melolontha*) has been made compulsory in the province of Belluno and must be effected by collecting the adult insects when they appear in spring.

The work of collecting the cockchafers must be carried out by the persons concerned at their own expense (1).

**Morocco (French Zone).** — By Decree of the Director General of Agriculture, Commerce and Land Settlement, dated 27 December 1932, all sellers of coal tar oils, emulsions of such oils, or products containing coal tar derivatives, which are intended for use in the control of plant parasites must show on the delivery note or invoice, on the wrappings, containers or packing material, and on the advertisements, circulars, posters and price lists : —

(1) the indication that the product is a coal tar derivative ;

(2) the indication of the content of the product in anthracene oil and its total content (expressed in centimetres per 100 c.c.) in phenols (carbolic acid and higher derivatives).

Anthracene oil is considered in the present text as being the product obtained by distillation of coal tar between the temperatures of 270° and 400° C.

When coal tar oils, emulsions of such oils or products containing coal tar derivatives can be used on plants only in the dormant season, the wrappings, containers, packing materials, posters, advertisements and price lists must clearly indicate the fact in letters at least half a centimetre in height.

The indication must be in the French language and must appear on both the delivery note and the invoice. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 6 janvier 1933, XXII<sup>ème</sup> année, n° 1054, p. 12-13).

\* \* A Decree of the Director of Waters and Forests, dated 29 December 1932, provides for the destruction of rabbits in certain zones of the 'Annexe' of Tedders ('Contrôle' of Zemmour) by any means except fire.

Rabbits killed under this Decree may not be transported, hawked or exposed for sale in any place whatever.

The present Decree will remain effective until 2 September 1933. (*Ibid.*, p. 13).

(1) Communication from the Ministry of Agriculture and Forests to the International Institute of Agriculture

\*\*\* A Decree of 3 January 1933 contains additions to that of 12 June 1931 [see this *Bulletin*, 1931, No. 9, p. 167] regulating the application to copper compounds of the Viziria<sup>1</sup> Decree of 10 June 1931 [*Ibid.*, p. 167] concerning the trade in insecticides and fungicides.

All sellers of copper salts or other copper compounds or preparations with a copper basis, must show on the delivery note or invoice, on the wrappings, containers, or packing material, and on the advertisements, bills or price lists, the content in copper of the product sold and its chemical nature (copper acetate, copper chloride, Bordeaux mixture, colloidal copper, etc.). For copper compounds intended to be utilised in the form of powder, it is necessary also to indicate the degree of fineness of the powder 'expressed in terms of the French standard (mesh)' (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 13 janvier 1933, XXII<sup>ème</sup> année, n° 1055, p. 36).

\*\*\* By Decree of the Director of Waters and Forests, dated 25 January 1933, owners or holders of land within certain zones of the Circle of Loukkos (Ouezzan) are authorised until 2 September 1933 to destroy on their land, by any means except fire, rabbits which are causing damage to their crops. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 3 février 1933, XXII<sup>ème</sup> année, n° 1058, p. 96).

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[*Janus (Cephus) compressus* on the Carso].

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[*Raphanus Raphanistrum*, *Rapistrum rugosum*]

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[See in this connexion, this *Bulletin*, 1932, No 2, p. 30]

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[*Doclostaurus maroccanus*].

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[*Pitymys savu*]

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[In Rumanian, with summary in French and German. *Hylebius abietis*!]

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[*Puccinia coronata*, *P. triticea*, *P. glumarum*, *P. bromina*].

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[Sugar beet was attacked during the 1932 season in the different regions of Italy by the following insects: — *Cleonus mendicus*, *Cassida vittata*, *C. nobilis*, *Chaetocnema tibialis*, *Pegomya hyoscyami*, *Laphygma exigua*, *Scotogramma trifolii*, *Polia oleracea*, *Gryllus desertus*, *Cebrio* sp., *Agriotes* sp.].

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[*Graphium Ulmi*].

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OCIREMENKO, N. S. Geschichte der Reblausbekämpfung in der Krim. *Bulletin of Plant Protection*, I Series: Entomology, Leningrad, 1932, Nr. 4, pp. 131-153, fig. 1. [Literature], p. 153. [In Russian, with title and summary in German. *Phylloxera vastatrix*].

O' CONNOR, C. Potato breeding and resistance to blight. *The Gardeners' Chronicle*, London, 1933, Third Series, Vol. XCIII, No. 2407, pp. 104-105, figs. 48-49. [*Phytophthora infestans*].

OKABE, NORIO. Bacterial diseases of plants occurring in Formosa. I *Journal of the Society of Tropical Agriculture*, Taiwan (Formosa), Japan, 1932, Vol. IV, No. 4, pp. 470-483, figs. 1-5 [*Bacterium Phaseoli* var. *sojense* on *Glycine Soja*; *Bact. Ricini* on *Ricinus communis*; *Bact. Citri* on *Citrus* spp. and *Fortunella* spp.; *Bact. maculicola* on *Brassica* spp. and *Raphanus* spp.; *Bact. Malvacearum* on *Gossypium herbaceum*; *Bact. campestre* on *Brassica* spp. and *Raphanus* spp.].

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[The development of this insect seems to have assumed unusual proportions in 1932 in a large part of Italy. It has caused very serious damage to cabbages and lucerne in Tuscany.]

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[*Melanoplus* spp. and *Camnula pellucida* in certain parts of the United States of America.]

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[*Puccinia graminis Tritici*].

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[In Russian, with title and summary in English].

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[In Russian, with title also in English. *Doclostaurus maroccanus*].

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RICCARDO, SALVATORE. Secondo contributo allo studio di una malattia che danneggia le olive in Calabria (*Macrophoma dalmatica* (Thum.) Berl. et Vogl.) *Annali di Tecnica Agraria*, Roma, 1933, anno VI, fasc. II, pp. 209-216, figg. 1-2, tav. V-VII.

[With summary in Italian and Latin].

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[*Puccinia triticina*, *P. glumarum*].

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[The writer considers it extremely improbable that this is an Italian species and even less that it may be numbered among the pests of maize].

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[In Russian, with title and summary in German].

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[In Russian, with title and summary in English].

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[The two diseases studied are 'Tobacco mosaic 1' and 'Tomato spotted wilt'].

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[Caterpillars of *Cossus cossus* on the hazel]

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['Streak' is a virus disease]

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[*Schistocerca americana* and *Mcianoplus femur-rubrum*]

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[In Russian, with title and summary in English].

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## NOTES

**New Official Correspondents.** — The French Government has appointed as official correspondents of the International Institute of Agriculture for questions relating to plant protection, Professor Paul MARCHAL, Director of the Central Entomological Station of Paris, and Mr. Étienne FOEX, Director of the Central Station for Plant Pathology of Versailles

**Entomological Society of London.** — This Society will celebrate its hundredth anniversary on May 3, 1933.

# INTERNATIONAL BULLETIN OF PLANT PROTECTION

1933

No. 5

## DISCOVERIES AND CURRENT EVENTS \*

### French North Africa: The Desert Locust (*Schistocerca gregaria*) (1).

#### ALGERIA.

- 1 March 1933 — Three large red and yellow swarms coming from the W. settled at 5 p. m. at Adjerna, Bellil and Nili (35 to 50 km S. E. of Laghouat). Departed on the 2nd at midday flying S. S. W.  
A swarm coming from the S. E. settled at Reggan (In-Salah).
- 2 " " — Laying reported from 28 February to 2 March over 3200 ha in the S. of the mixed commune of Tébessa.  
A large swarm settled at 5 p. m. at Aïn Taoudmout, douar Hamidy (the Télagh). Flew away on the 3rd at 4. p. m. towards the E.
- 3 " " — A yellow swarm coming from the W. passed Berriane (40 km. N. of Ghardaïa) flying E.  
A large yellow swarm coming from the S. E., settled between Djebel Meslouch and Djebel Halleb, douar Taberdga (Klenchela) over 20 km and laid eggs.
- 4 " " — Swarms reported on 15 and 16 February in the douars Taфраoua and Kreider (Saïda), departed, the first towards the E. and the second towards the N. W.  
A small swarm passed Aïn-el-Hadjar (district of Mascara) flying N.  
A red and yellow swarm coming from the S. settled at 5 p. m. at Daïet el Guelt (80 km S. E. of Messad-Djelfa) over 5 × 2 km. Departed on the 5th at 8 a. m. flying W.  
A large swarm settled in the region of Bir-Senacha (S. of Khenchela) over 30 sq. km.  
A small swarm passed Aïn-Souane (58 km N. of Géryville) flying E.

\* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from the Government General of Algeria (Direction des Services Economiques) to the International Institute of Agriculture.



- 5 March 1933. — A very large yellow swarm settled near Oglat Bikhar (S. of the commune of Khenchela) over 50 sq. km.  
 A yellow swarm settled in the douar Aliennas (Khenchela). Copulation and laying reported on the 6th at Djebel Batta.  
 A very large red swarm coming from the S. W. settled at 4 p. m. in the douar Moider (the Télagh). Left on the 6th at 3 p. m. flying N. E.  
 A large red swarm coming from the S. settled at Moghrar Foukani (Aïn-Sefra). Departed on the 6th flying S.  
 A small swarm settled to the N. of the pass of Sfa, douar Brani (Aïn-Touta) and departed towards the S.
- 6    »    »    -- Yellow swarms reported in the regions of Guerguit Speha and Oued-el-Ahmar of the douar Taberdga (Khenchela).  
 A large pink swarm coming from the S. settled at midday on the Kreider (Saïda).  
 A large swarm coming from the W. passed over Djemah Lakhdar (Khenchela) flying E.  
 The swarm reported on 15 February at the douar Ouled Nehar Gheraba (Sebdou) flew away and settled again 40 kms S. W. of Sebdou.
- 7    »    »    -- A yellow swarm settled in the valley of the Oued-el-Ahmar (Khenchela).
- 8    »    »    - Small grey swarms settled in the douars Dehalsa and Ouled Djerad (Trézel) and departed towards the S. W.  
 A small swarm coming from the N. settled 10 km E. of the Djebel Melah (Géryville); flew N. on the 9th.  
 Laying reported at Hassi en Naga and Oued en Nsa (55 to 70 km N. of Ouargla).
- 9    »    »    — A small pink swarm coming from the W. settled in the regions of Wagram (Saïda).
- 10    »    »    - A swarm reported on 6 March 40 km S. W. of Sebdou departed and settled 25 km S. E. of Sebdou over 40 km.  
 A swarm of 1 sq. km settled at Herrich near Négrine (Tébessa). Departed on the 11th and settled at Besseriana and again on the 12th at Sokhna.  
 Swarms settled in the region of Sidi-Okba, Sidi-Khelil, Saada, Fibache, Chetma laid and flew N.  
 A small red swarm coming from the W. settled at 5 p. m. at Djorf Takhma, douar Beni-bou-Saïd (Marnia). Departed on the 11th but wheeled round and settled again on the 12th at the same point until 16 March when it flew W.  
 A red and yellow swarm coming from the S. settled at 15 km S. S. E. of Aïn-Madhi (Laghout). Copulation and laying on 12 March at Guerna Smara (6 sq. km) at Mekhabet (10 sq. km) and between Aïn-Madhi and El Honita (3 sq. km.).

- 11 March 1933 — A swarm coming from the E. settled at Kef Ali M'hammou, douar Oulache (Aurès). Flew W. on the 12th.  
A very large swarm settled between Maghder el Ournik and 15 km E. of Delaa (Laghouat) covering an area of  $30 \times 12$  km. Copulation and laying.
- 14 " " — Two small swarms coming from the S. settled at Sidi-Rached and Sidi-Khelil (Touggourt).  
A swarm settled at Mogta Delli (Méchéria). Departed on the 17th flying E.  
A swarm settled and laid at Soumoussa and Foun Zouif near Négrine (Tébessa).
- 16 " " — A small swarm coming from the S. settled at Djarima, to the S. of the douar M'chounèche (Aurès) and flew away S.
- 17 " " — A swarm coming from the S. W. settled at El-Hamman Nouider, region of Bedeau (the Félagh). Departed on the 19th to settle 10 km further W. and on the 20th at 2 p. m. flew away towards the S. W.
- 18 " " — A swarm coming from the W. settled at Medel, douar Ouled Nehar Gheraba (Sebdou). Flew E. in the morning of the 19th.
- 19 " " — The swarm reported on 10 March 25 km S. E. of Sebdou flew away S.  
Laying reported at the douar Behiret (600 ha) and at Oued Nagues (70 ha) (Tébessa).  
A swarm of  $3 \times 1$  km settled at Khorchef el Gherbi, douar Beni-bou-Saïd (35 km S. W. of Marnia). Flew away on the 20th going W.
- 20 " " — Laying reported at Hassi Debiche (40 km N. of Ouargla) over  $4 \times 3$  km.  
Laying reported at Oued el Bir 30 km N. of Ghardaïa. Large swarms settled from 20 to 22 March in the douar Aliennas (Khenchela). Copulation.
- 21 " " — Laying reported at Domsta near Négrine (Tébessa).  
Laying reported at Hassi Zid (40 km N. of Ouargla).
- 22 " " — Laying reported at Makloukha, douar Ferkane (Tébessa) over 100 ha.  
A swarm settled and laid at Daït Mira near El-Haouch (Biskra).  
Large swarms coming from the S. settled between Taфраoua and Kralfallah (60 km. S. of Saïda) and laid at Taфраoua and Aomeur.  
Two swarms coming from the S. settled at 4 p. m. at the douar Ouled Nehar Cheraga (40 km S. E. of Sebdou). Departed on the 23rd flying E.
- 23 " " — A small swarm settled and laid at Draa Edebab to the S. of Lïona (Biskra).

- 23 March 1933 — A swarm settled at Souaridj, douar El-Gor (the Télagh) covering 200 ha.  
 A swarm coming from the S. W. passed Bedeau (the Télagh) at 3 p. m. flying N. E.  
 A very large swarm settled at 4 p. m. at Titen Yahia (11 km N. E. of Bedeau, the Télagh). Copulation on 28 March and laying on the 31st.
- 24   "   "   — Laying reported over 500 ha near Ferkane and over 150 ha near Négrine (Tébessa).  
 Three red and yellow swarms settled in the vicinity of Tadjemout (Laghout) and laid.
- 25   "   "   — A very large swarm settled to the S. E. of the douar Taberdga (Khenchela).  
 A very large swarm settled 30 km S. of Biskra.
- 26   "   "   — Swarms coming from the S. W. settled near Khadra and Sfoum Reddad (Aflou).
- 27   "   "   — A swarm settled to the S. of Taberdga (Khenchela) and laid at the Oued Mekahzan, Guerriane and Elzzeb.  
 A large swarm settled between Kanga Sidi Nadji and Teloui Ahmed (Khenchela). Departed on the 28th in the morning flying W.  
 Laying reported at Zgaing, lat. 38°58, long. 5°62 (Tébessa).
- 28   "   "   — Laying reported in the vicinity of Aïn-Madhi and El Haonita (Laghout).  
 A swarm coming from the S. settled at Djellal Delouaa to the S. of Seiar (Khenchela).  
 A swarm coming from the E. settled in the regions of Oued Rhalboune and of the Djebel Tirimbou (Khenchela) and laid.  
 A yellow swarm coming from the S. settled at Anezedjar (12 km S. of Ghardaïa). Departed on the 29th in the morning, flying N.  
 A large swarm coming from the S. W. settled to the W. of Khanga (Tébessa) over 6 ha.
- 29   "   "   — Swarms coming from the S. settled over 20 ha at Foun ben Derradj and over 8 ha to the N. of the Djebel Mesbouch (Khenchela) and laid.  
 A swarm settled in the region of Boumelih, 12 km E. of Doucen (Ouled-Djellal-Biskra), flew E.  
 A large yellow swarm coming from the E. settled at 1 p. m. in the Oued-el-Abiodh (12 to 20 km N. and W. of Ghardaïa).  
 A large yellow swarm coming from the S. settled at 9 a. m. at Daiet Bagra (80 km S. E. of Messaad-Djelfa) and laid.
- 30   "   "   — Laying reported over 20 ha at Roundje, 8 km S. of Ferkane (Tébessa).

- 30 March 1933 — A large swarm settled on the Oued-Djeddi (Biskra) and laid.
- 31 " " -- A swarm of  $4 \times 1$  km coming from the N. E. settled to the N. of Khanga Sidi Nadji (Khenchela).  
A small pink swarm coming from the S. W. settled in the douar Madena (Frenda).  
Laying reported at Oued-el-Ozen Neza Mançour, 13 km N. E. of Doucen (Ouled-Djel-lal-Biskra).

# MOROCCO.

- 2 March 1933 — A pink swarm settled at Tillouguit Sit Isha (region of the Tadla). Flew away E. on the 3rd.
- 5 " " — A red swarm of  $10 \times 1$  km settled near Bouhouria (region of Oudjda).
- 6 " " — Swarm of 30 sq km settled at Timouassiouine (region of Oudjda).
- 8 " " — A pink swarm of 1 sq. km, coming from the N., settled 20 km S. of Demnat (region of Marrakech).  
A pink swarm of  $3 \times 2$  km, coming from the N., settled on the Oued Tassout (20 km. S. W. of Demnat - region of Marrakech).
- 9 " " — A sparse swarm coming from the S. settled on the Ftouaka (region of Marrakech).  
A red swarm coming from the W. passed Tillouguit Sit Isha and ascended the Assif Melloul (region of the Tadla).  
A small red swarm coming from the N. E. settled at Fritissa (region of Oudjda). Departed on the 10th, flying S. W.
- 11 " " — A yellow swarm reported between Naïma and Oudjda. Copulation.
- 13 " " -- A yellow swarm of  $4 \times 2$  km settled on the Beni Koulal (15 km S. E. of Taourirt - region of Oudjda).
- 14 " " — Numerous swarms between Bouhouria and Naïma (region of Oudjda)  
Laying reported over 600 ha 18 km N. W. of Oudjda.
- 15 " " --- The swarm reported on the 6th at Timouassiouine (region of Oudjda) flew in a N. E. direction and returned to its point of departure.
- 18 " " -- A yellow swarm settled at Timsiguet (region of the Tadla) and laid on the 19th over 3 ha.
- 19 " " — A swarm settled at Timgerfi (region of Oudjda) departed flying W.  
A red swarm coming from the E. settled at Dar Hamada (region of Oudjda).
- 20 " " — A dense yellow swarm settled at Sidi-Mimoun (15 km N. W. of El-Aïoun - region of Oudjda). Copulation and laying reported on the 29th over 1000 ha at Kraa-el-Halloufa.

- 21 March 1933 -- A swarm settled on the Sidibou-Naga (65 km E. of Marrakech) and laid over 100 ha.  
A swarm coming from the S. settled at the Ouled Saïd (region of Marrakech). Copulation.
- 25 " " - The swarm reported on the 19th at Timgerfi (region of Oudjda) laid over 2500 ha.  
A yellow swarm of  $2 \times 3$  km, coming from the S., settled at the Takijalet (region of Oudjda).
- 28 " " -- A swarm of  $5 \times 2$  km, coming from the S., settled at the Zebelbou-Touzine (E. of Taourirt) -- region of Oudjda).  
Swarm settled at El-Mjadib (E. of Taourirt -- region of Oudjda). Copulation.

## TUNIS.

- 2 March 1933 Laying reported at M'guissem (27 km S. E. of Ben Gardane).
- 5 " " A yellow swarm coming from the N E. settled at Oued-Rebbane (40 km E. of Tataouine) and laid on 5 and 6 March

**Eritrea: The Tropical Migratory Locust (*Locusta migratoria migratorioides*) (1).**

During March 1933 no swarms of the tropical migratory locust have appeared in the Colony.

**United States of America: Observations on the Distribution of the Strawberry Dwarf Nematode in 1932 (2).**

Interest in the distribution of the strawberry nematode (*Aphelenchoides fragariae*) in the United States was first aroused by the discovery in 1929 that it was the cause of the dwarf disease common throughout the Southeastern States from North Carolina to Virginia. So far as American records of plant disease go dwarf disease was not known north of the Arkansas, Tennessee and North Carolina boundary (approximately  $36^{\circ} 30'$  N. L.) prior to 1929.

In spite of the fact that plants known to have been shipped from infested areas in North Carolina were planted in a number of northern States, the disease was found only in a few localities and this chiefly on recently introduced plants. This is particularly hard to explain in view of the fact that this nematode has long been known in England, Germany, France, Belgium, Holland, Denmark, Norway and Sweden as the cause of the disease of strawberries known as « cauli-

(1) Communication from the official correspondent of the Institute, Dr. Rolando GUIDOTTI, Chief of the Agricultural Bureau of Eritrea transmitted by the Government of the Colony.

(2) Communication from the official correspondent of the Institute, Dr. Neil E. STEVENS, Senior Pathologist, Plant Disease Survey, Bureau of Plant Industry, United States Department of Agriculture, Washington.

flower» and strawberry plants from Europe have frequently been introduced into the northern United States.

The dwarf nematode was, however, found in May and June, 1931, on Cape Cod, Massachusetts, on Blakemore plants brought the previous year from North Carolina. These Blakemore plants did not show typical dwarf symptoms. *A. fragariae* was found also in a small number of the Howard 17 variety, a commercial variety commonly grown in this region.

The winter of 1931-32 on Cape Cod was exceptionally mild. This was followed by a dry spring which, just before the picking season began, gave way to a period of abundant rain. Early in May, 1932, several of the Howard 17 fields were in poor condition. Two out of three specimen plants from one of these fields sent to Dr. G. Steiner for examination were found to harbor *A. fragariae* in considerable numbers. J. R. Christie visited the Falmouth region on June 27, 1932. At this time the disease symptoms were not severe and the resemblance to typical dwarf as it occurs in the South not striking. However, both Dr. O. C. Boyd and Dr. E. F. Guba pointed out that the abnormalities were much more marked earlier in the season and judging from photographs taken at that time the resemblance to dwarf was more pronounced.

About one-third of the diseased plants selected from various fields visited were found to harbor *A. fragariae* in numbers of 50 to 100, a few were apparently free of the parasite and the remainder rather lightly infested. Many healthy plants from the same fields were also infested although, on an average somewhat less severely.

The 1932 situation seems to demonstrate beyond doubt that the presence of *A. fragariae* on Cape Cod plantings of Howard 17 has no connection with the introduction of the Blakemore variety in 1930. It appears much more probable that the nematode was long ago introduced into this region — perhaps direct from Europe — but under ordinary weather conditions disease symptoms are rarely produced in the plants. There appears to be no reason to believe that the parasite is consistently increasing or that its effects in this region will be more significant in the future than in the past.

### India : Diseases in the Bombay Presidency (1).

The following parasites and virus diseases have been recorded for the first time in the Bombay Presidency : —

*Peronospora trigonellae* Gaum. was found on *Trigonella foenum-graecum* L. near Poona. This is believed to be the first record of this parasite in India.

*Pestalozzia palmarum* Cke., which is commonly found on leaves of cocoanut, also affects undeveloped nuts. The fungus had darkish spots on specimens received from Honavar in the North Kanara district.

*Uromyces fabae* (Pers.) De Bary on *Pisum sativum* L.

*Oidium erysiphoides* Fr. on *Zizyphus jujuba* Lam.

(1) Communication from the official correspondent of the Institute, Mr. B. N. UPPAL, B. A., Ph. D., Plant Pathologist to Government, Bombay Presidency, Poona.

*Sclerotium rolfsii* Sacc. on *Cannabis sativa* L.

*Cercospora rosicola* Pas. on Rose.

Mosaic on *Helianthus annuus* L. and *Momordica charantia* L.

*Rhizoctonia bataticola* (Taub.) Butl. on *Ricinus communis* L.

## Southern Rhodesia: Locust Invasion 1933 (1).

Monthly Report No. 2, January, 1933.

### 1. *Nomadacris septemfasciata*.

Further reports of egg-laying by this species have come from the following districts during the month viz: Wankie, Bubi, Gwelo, Insiza, Selukwe, Chilizanazi, Hartley, Lomagundi, Mazoe, Melssetter, Bikita, and Ndanga. Hoppers have appeared during the period under review in 19 districts, the free districts being in the southern portion of the colony.

The large flying swarms have been gradually dispersing or disappearing and egg-laying appeared to be on the wane towards the end of the month.

### 2. *Locusta migratoria migratorioides*.

Emergence of hoppers of the Tropical Migratory Locust has occurred in Darwin, Mazoe, and Mrewa Districts during the month, and more eggs are stated to have been laid in Mrewa.

### 3. Parasites.

The parasite that appears at present to be the most important is *Stomatopora lunata*, F., attacking the eggs of the Red Locusts in the Lomagundi and Mazoe Districts. It is believed to be present elsewhere. It was first found, during the present invasion, early in January. Parasitism of over 90 % has been recorded from one farm and is believed to exist in others. Low percentages have also been found. Other enemies of Red Locust eggs are mites and Coleopterous larvae.

Four Dipterous species have been reared from Red Locusts received dead in the laboratory but it has not been established that any of these is parasitic. A species of red mite has been taken from Red adults in the field. A large percentage of adult Red Locusts from an egg-laying swarm (left behind by a large swarm) was found to be infested with roundworms.

### 4. Destruction of Hoppers.

Hatchings of the Migratory Locust have been dealt with in the Darwin District and the situation in the Zambesi Valley near the Portuguese Border in this District is well in hand. Many swarms of both species have been destroyed in the Mazoe District and hatching continues. In the Zambesi Valley the destruction of very heavy hatchings of the Red Locust is proceeding. In the Lomagundi District

(1) Communication from the official correspondent of the Institute, Mr. Rupert W. JACK, F. E. S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

the hatchings have been exceptionally heavy and widespread and a considerable staff of Europeans and natives is being employed in the work of destruction on Crown Lands and in Native Reserves. Hatchings in the districts of Wankie, Bubi, Nyamandhlovu, and Bulalima-Mangwe are reported to be heavy.

Operations against hoppers of one or both species are being carried out in twenty-one districts. Further heavy hatchings are expected and prepared for in various parts of the colony.

The farmers generally are destroying hoppers on their farms in a satisfactory manner and are cooperating well with the local officials.

It is to be realized that complete extermination of hoppers in the more remote portions of the colony is an impossibility and that the expense incurred would not be justified in view of the heavy infestations in neighbouring territories which are not apparently being attacked

### Monthly Report No. 3, February, 1933.

#### 1. *Nomadacris septemfasciata*.

No further reports of egg-laying have been received during the period under review, and by the end of the month flying swarms had disappeared. The more advanced hoppers had reached the fourth stage of their development by the end of the month. Further hatchings have occurred in most of the infested districts.

#### 2. *Locusta migratoria migratorioides*.

A few flying swarms have been reported during the month, chiefly from the Sipolilo and Darwin areas. These are believed to consist of adults of the new generation and all but one are thought to have crossed our border from the north. Neither egg-laying nor new hatchings have been reported. Hoppers have apparently reached the fifth stage of their development, and in one case, have changed to adults.

#### 3. Parasites.

No further parasites have been reported.

#### 4. Destruction of hoppers.

Operations against hoppers continued in the infested districts, although towards the end of the month in some less heavily infested districts they were confined to occasional expeditions of a minor nature.

The infestation in the Southern portion of the colony developed to a larger extent than was at first expected.

#### 5. General.

Control in some areas is proving to be more difficult than was anticipated, owing to successive egg-deposits and a prolonged period of hatching. Driving the hoppers has not proved to be practicable, and reports of definite marching



of hoppers, as occurs in other species, have been rare. Experiments in control of Red Locust hoppers in maize lands and in long grass by baiting methods have not yet shown promising results. Ground maize cobs have been found to be as effective as maize meal or wheaten bran as a carrier.

It is expected that there will be six hopper stages of the Red Locust.

## LEGISLATIVE AND ADMINISTRATIVE MEASURES

**Belgium.** — By Ministerial Decree of 10 April 1933, any grower or holder of cherries who observes the presence of *Rhagoletis cerasi* (cherry fruit fly) in his crops or stores is expected immediately to make declaration to the burgomaster of the commune, who will inform the Minister of Agriculture by telegram.

Cherries gathered on a plot of land which the Chief of the Plant Protection Service has declared to be infested by the cherry fruit fly cannot be transported from that plot unless they have been cooked.

No steps can be taken for the transport of cherries grown within the radius of one kilometre from a plot of ground declared to be infested with *Rh. cerasi* except with the permission of the above named officer.

The Chief of the Plant Protection Service may prescribe all measures necessary for the extermination of the insect, more particularly the gathering of the whole of the fruit and the injunction to cut down the cherry trees grown on land declared infested.

In certain cases he may extend these measures to other plants which present danger in regard to the propagation of the insect.

The Chief of the Plant Protection Service may allow exceptions to the preceding provisions, especially with a view to research or if the case is one of the cultivation of varieties known to be resistant to the insect.

Infringements of the present Decree will be punished by the penalties indicated in article 21 of the Royal Decree of 12 May 1929.

When the application of these provisions has occasioned severe losses to the grower cultivating the plots of ground in question, the Minister of Agriculture may decide on the grant of a sum in compensation (*Moniteur Belge*, Bruxelles, 28 avril 1933, 103<sup>e</sup> année, n<sup>o</sup> 118, p. 2238-2239).

**Spain.** — By 'Orden' of 16 March 1933 a Station has been created for the improvement of potato cultivation which will form part of the Institute of Agricultural Research and will constitute a Section of the Institute.

Among the purposes of the Station is to study the adaptation of imported potato varieties for improving existing varieties for different uses and for disease resistance, also to carry out researches on the 'mountain cure' in order to produce strains selected for resistance to virus diseases (*Gaceta de Madrid*, Madrid, 21 marzo 1933, año CCLXXII, tomo I, núm. 80, pág. 2120).

\* \* In view of the fact that in North Portugal there are various seats of potato wart disease ('sarna negra', *Synchytrium endobioticum*), by Ministerial 'Orden' of 6 April 1933 it is forbidden to import potatoes from Portugal

unless the consignments are accompanied by a certificate issued by the official Phytopathological Service of the country of origin in which it is stated that the potatoes have been produced in a region free from wart disease and at least 20 kilometres distant from any infected potato crops, and that the consignment was found free from the fungus at the time of the inspection carried out by the Spanish Phytopathological Service on importation. (*Gaceta de Madrid*, Madrid, 9 abril 1933, año CCLXXII, tomo II, núm. 99, pág. 245).

**France.** — By Ministerial Decree of 14 February 1933 the members of the Liaison Committees at the Phytopathological Research Centres have been nominated. (*Journal Officiel de la République Française*, Paris, 17 février 1933, LXV<sup>ème</sup> année, n° 41, p. 1576).

\*\*\* By Ministerial Decree of 16 February 1933 the members of the Consultative Committee of the Crop Protection Service have been nominated (*Ibid.*, p. 1575-1576).

\*\*\* A Ministerial Decree of 28 March 1933 establishes the powers of the Consultative Committee for crop protection. (*Journal Officiel de la République Française*, Paris, 29 mars 1933, LXV<sup>ème</sup> année, n° 75, p. 3163).

**Italy.** — By Ministerial Decree of 28 December 1932 shooting and snaring birds by any means are forbidden during the whole of the 1933-34 shooting season in the region of Mt. Artemisio (about 10,000 hectares) in the province of Rome. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 11 gennaio 1933, anno 74<sup>o</sup>, n. 8, pp. 103-104).

\*\*\* A Ministerial Decree of the same date contains restrictions with regard to shooting in certain parts of the province of Parma. Shooting and snaring of the red-legged partridge [*Caccabis rufa*] are, for instance, forbidden during the 1933-34 shooting season (*Ibid.*, p. 104).

\*\*\* By Ministerial Decree of 5 January 1933 shooting and snaring birds by any means are forbidden during the whole of the 1933-34 shooting season in the region of Campagnano in the province of Rome. (*Ibid.*, 16 gennaio 1933, n. 12, pp. 185-186).

\*\*\* By Ministerial Decree of 18 February 1933 the Director of the Station of Plant Pathology at Rome has been nominated Special Commissioner for the supervision of the obligatory control measures against 'mal secco' of citrus trees [*Deuterophoma tracheiphila*] in the citrus growing regions of the provinces of Messina and Catania (1).

\*\*\* The Ministerial Decree of 28 February 1933 revising the special technical regulations for the exportation of potatoes, specifies *inter alia* that by healthy tubers is understood those free from disease and having the surface free

(1) Communication from the Ministry of Agriculture and Forests.

from spots, traces of rot or other defects spoiling the appearance of the tuber or indicating that it is not edible. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 16 marzo 1933, anno 74<sup>o</sup>, n. 63, pp. 1082-1085).

\* \* A Ministerial Decree of 14 March 1933 containing special technical regulations for the exportation of peaches established *inter alia* that fruits intended for export must be healthy. (*Ibid.*, Roma, 23 marzo 1933, n. 69, pp. 1203-1206, 4 figg.).

\* \* By Ministerial Decree of 16 March 1933 an obligatory Consortium (Syndicate) of olive growers of the province of Campobasso has been formed. One of the objects of the Syndicate is the control of diseases and pests of the olive (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 24 marzo 1933, anno 74<sup>o</sup>, n. 70, pp. 1215-1216).

\* \* By Ministerial Decrees of 18 and 23 March 1933 obligatory Consortiums (Syndicates) of the olive growers of the provinces of Frosinone and Brindisi have been formed. Among the purposes of the Syndicates is the control of pests and diseases of the olive. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 29 marzo 1933, anno 74<sup>o</sup>, n. 74, p. 1256; 30 marzo 1933, n. 75, pp. 1273-1274).

\* \* In order to prevent the introduction into Italy of exotic scale insects very dangerous to fruit trees, by Ministerial Decree of 29 March 1933 the importation and transit of plants and parts of plants of the genus *Ulmus*, with the exception of the fruits (samaras), coming from all countries, are suspended. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 4 maggio 1933, anno 74<sup>o</sup>, n. 104, p. 1843).

\* \* By Ministerial Decree of 31 March 1933 an obligatory Consortium (Syndicate) of the olive growers of the province of Rieti has been formed. Among the objects of the Syndicate is the control of the pests and diseases of the olive. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 7 aprile 1933, anno 74<sup>o</sup>, n. 82, pp. 1370-1371).

\* \* By Ministerial Decree of 6 April 1933 an obligatory Consortium (Syndicate) of the olive growers of the province of Rome has been formed. Among the purposes of the Syndicate is the control of pests and diseases of the olive. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 20 aprile 1933, anno 74<sup>o</sup>, n. 93, p. 1584).

\* \* Ministerial Circulars Nos. 19090 and 19911 of 22 and 27 April 1933 addressed to the Directors of the Regional Phytopathological Observatories, establish the regulations to be observed in the exportation of raw cherries to Great Britain (Circ. No. 19090), to Germany and the Netherlands (Circ. No. 19911) (1).

(1) Communication from the Ministry of Agriculture and Forests to the International Institute of Agriculture.

**Latvia (1).** — By Decree of the Minister of Agriculture, dated 2 December 1932, published in the Official Journal (No. 280 of 1932), the complete destruction of barberry (*Berberis vulgaris*) and of buckthorn (*Rhamnus cathartica*), ordered by the Law of 20 March 1930 [see this *Bulletin*, 1930, No. 8, p. 126], has to be accomplished by 20 March 1935.

\*\*\* The Ministry of Agriculture has published in the Official Journal (No. 19 of 1933) a list of the means of control of plant diseases and pests which may be placed on the market without having been previously submitted to an official biological examination.

\*\*\* An amendment published by the Official Journal (No. 24 of 1933) modifies as follows the Law of 28 May 1931 relating to plant protection [see this *Bulletin*, 1931, No. 12, p. 220].

The Ministry of Agriculture is empowered to submit all means of control of plant diseases and pests to tests and to prohibit trade in products found to be ineffective or ill-adapted. Moreover it will carry out inspection of plants intended for import or export and may prohibit the importation or exportation of injurious plants or plant pests. Finally it may order the inspection of fields, gardens, forests and storage depots.

Results of the testing of the means of control may be published giving the names of the respective products and manufacturers. If the case is that of national production the manufacturers will bear the costs of this examination. Costs of the inspection of imports and exports will be borne respectively by the persons importing and exporting.

Consignments in transit are submitted to examination if unloaded and re-packed in Latvia.

**Morocco (French Zone).** - Two Decrees of the Director of Waters and Forests, dated 1 and 3 March 1933, authorise the destruction of rabbits in certain zones respectively of the region of control of the Hayâina (region of Fez) and of the civil control of the Zemmour. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 10 mars 1933, XXII<sup>me</sup> année, n° 1063, p. 226).

**Portugal.** — The Presidential Decree No. 22:389 of 29 March 1933 is concerned with the importation of seeds, plants and plant parts intended for purposes of propagation coming from European and non-European countries, and with their exportation.

Goods for importation must be accompanied by an official certificate of origin and health, which must, according to the case concerned, specify that the products contain no soil nor seeds of *Cuscuta* or *Orobanché*; that potato wart disease (*Synchytrium endobioticum*) does not occur in the fields of origin, and that the

(1) Communication from the official correspondent of the Institute, Dr. M. EGLITS, Phytopathological Laboratory of the University, Riga.

latter are situated at least 5 km from any centre of infection with this disease; that the region of origin is free from *Bacillus amylovorus*, *Endothia parasitica* and 'court-noué'; that there is no plant attacked by *Phytophthora cambivora* within a radius of at least 5 km of the region of origin.

As a protection against the introduction of *Graphium Ulmi* it is forbidden to import elms; it is also forbidden to import into the Azores potatoes coming from Madeira, in order to avoid the introduction of *Bacterium Solanacearum*.

Imported products must be submitted to inspection and, if necessary, to fumigation.

Imported fruits must be absolutely free from exotic scale insects and in particular from *Aspidiotus perniciosus*.

Seeds, plants and plant parts intended for export must be submitted to inspection and if they comply with the regulations the exporter will be given the certificate of origin and health issued in accordance with the requirements of the phytopathological legislation of the importing country (*Diário do Governo*, Lisboa, 1 de abril de 1933, I série, núm. 75, págs 447-448).

\* \* In the north of the country some small seats of 'verruca negra' [potato wart disease, *Synchytrium endobioticum*] have been discovered, by Presidential Decree No. 22 : 463 of 8 april 1933 the following regulations have been established --

During 5 years from the date at which the presence of the disease is ascertained owners of infected land are allowed to grow potatoes only if they belong to varieties recognised as immune by the Phytopathological Inspection Services and are of certified origin

Zones of protection are declared surrounding the centres of infection extending over a radius of about 500 metres.

Owners of land included within a zone of protection are allowed to cultivate only potatoes complying with the conditions indicated above.

Potatoes grown within the centres of infection and within the zones of protection may not be transported outside without the written authorisation of the Division of the Phytopathological Inspection Services

Potatoes which have been transported outside the zones and do not satisfy the preceding requirements will be confiscated and distributed to charity institutions; in cases in which potato seed has already been planted the crops will be lifted and the land will be regarded as infected for 5 years.

The General Administration of the Agricultural Services will at the necessary time have the infected land and zones of protection inspected, and will lift and destroy any potato crops not belonging to immune varieties.

It is forbidden to transport from infected land farmyard manure and any residue of crops grown on such land.

It is also forbidden for growers within the infected zones to sell any plant coming from the said zones and intended for replanting on other land.

Offences will be punishable by a fine of 500 \$.

Any person knowing of the existence of a new centre of infection and any person knowing of a lot of potatoes in storage, for sale or in transit which is

infected with the disease is obliged to report it to the local authority who will inform the General Administration of Agricultural Services. (*Ibid.*, 10 de abril de 1933, I série, núm. 82, págs. 645-646).

**Tripolitania.** — By Governorial Decree of 30 March 1933 any person consigning eggs of locusts to the political and administrative authorities of the Colony will receive an award at the rate of four liras per kilogramme (gross weight), including in the weight for payment also the normal percentage of soil which in the judicial discretion of the above named authorities is ordinarily found to be mixed with collected eggs.

The regional authorities are responsible for the custody of the eggs after receipt and payment and will destroy them by burning. (*Bollettino Ufficiale del Governo della Tripolitania*, Tripoli, 16 aprile 1933, anno XX, n. 9, pag. 522).

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[Continued see this *Bulletin* 1933 No 1, p 19]

*Oscinis theae*, *O coffeae*, *Adrama determinata*, *A austeni*, *Opatrum depressum*, *Oecophylla smaragdina* *Cremastogaster rogenhoferi*, *Acropyga aculeiventris*, *Brachytupes portentosus* *Gryllus occipitalis* *Gryllotalpa africana*, *Calotermes* spp, *Copiotermes gestroi*, *Helopeltis* spp, *Pachypeltis humeralis*, *Poecilocoris latus*, *Empoasca flavescens*, *Lawana candida*, *Toxoptera* spp, *Aphis coffeae*, *Lecanium* spp, *Pseudococcus citri*, *Chionaspis theae*, *Aspidiotus* spp *Sasakiaspis* (*Diaspis*) *pentagona*, *Physothrips* spp, *Anaphothrips* spp, *Heliothrips haemorrhoidalis*, *Bergmatothrips theifloris*, *Paratetranychus bioculatus*, *Tenuipalpus obovatus* *Tarsonemus translucens* *Eriophyes* spp, *Caconema radiculicola*, *Gylenchus* spp, etc.]

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# INTERNATIONAL BULLETIN OF PLANT PROTECTION

## DISCOVERIES AND CURRENT EVENTS \*

### South Australia: Plant Disease Records (1).

**Cereals.** — In the Murray Mallee district in 1930 there was an appreciable amount of «white-heads». This was probably due to late root infection with *Ophiobolus graminis* and *Helminthosporium sativum*, though in many cases not sufficient to cause blackening of the stem-bases. Red Rust or Stem Rust (*Puccinia graminis*) was moderate to severe in some areas in 1930 — completely destroying some crops in the Loxton district — and light to moderate in 1931. Flag Smut (*Urocystis tritici*) was slightly more in evidence in infected districts in both years. *Rhizoctonia solani* and Nematodes (*Heterodera schachtii*) occur in small patches in wheat and oat crops every year, mainly in the mallee areas. Cereal smuts were light in both years.

**Pastures.** — The Red Grass-destroying fungus *Isaria graminiperda* was reported from a number of localities both in the north and in the southeast in 1931. It attacked mainly *Poa bulbosa* in patches of limited extent. This is the first record of the fungus for this State. The introduced grass *Brachypodium distachyum*, which is spreading in the neighborhood of Adelaide, is very severely affected with smut (*Ustilago bromivora*?) almost every year.

**Vines.** — Further cases of what is considered to be salt injury to vines following the run of dry seasons were recorded. Frost in October, 1931, caused serious damage to vines in the Clare and Coonawarra districts. A case of court-noué was recorded from Waikerie in 1931, and a case of variegation of the leaves from Clare. With the early break of the season in 1932 considerable trouble was caused by the mould *Botrytis cinerea* in the currant drying areas. A little Anthracnose (*Gloeosporium ampelophagum*) was noted in 1930-31, but on the whole vines have been very free from disease.

**Citrus.** — The wet winter of 1931 was responsible for Brown Rot (*Phytophthora hibernalis*) causing considerable losses of citrus fruit in the non-irrigated areas, particularly the Inman Valley. Bacterial Spot (*Bacterium citri-putrescentiae*) was also more prevalent than usual. A stem-end rot of the fruit caused by a species of *Phomopsis* agreeing closely with *Phomopsis californica* was recorded

\* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from the official correspondent of the Institute, Mr. Geoffrey SAMUEL, M.Sc., Plant Pathologist, Waite Agricultural Research Institute, University of Adelaide, Glen Osmond, South Australia.



in one case from Coromandel Valley. In another case a *Pleospora*, agreeing closely with *Pleospora herbarum*, caused a definite slow rot of a black leathery nature with reddish discoloration at the margins. Both these are new records for the State. A case of *Armillaria mellea* appeared on oranges at Kingston following the digging in of chips from the wood-heap. A few cases of Crinkle (cracking of the pithy part of the rind beneath the surface) were recorded from the drier areas.

**Stone and Pome Fruits.** — Silver leaf (*Stereum purpureum*) is gradually increasing in amount in the Adelaide hills, having been recorded on plums, apricots, and apples, and was also noted on Kangaroo Island. Black Spot or Scab of Apple (*Venturia inaequalis*) was more prevalent in 1931–32 than for some years past, but was not serious. Apple bark rot (*Physalospora cydoniae*) was reported from several localities. Curl-Leaf of peaches (*Taphrina deformans*) was bad in the wetter districts in 1931, and Shot-hole or Scab of apricots (*Clasterosporium carpophilum*) was also more prevalent than usual.

**Vegetables.** — Irish Blight of potatoes (*Phytophthora infestans*) was more prevalent in 1931 than for a number of years, and was severe again in the early part of 1932, many tons of potatoes being lost in the Mount Gambier district. Bacterial Blight of French beans, agreeing in symptoms with *Phytomonas meduaginis* var. *phaseolicola*, was also the cause of considerable loss of beans in both seasons. Celery blight (*Septoria apii*) was severe again, but control by spraying with Bordeaux Mixture is being more widely adopted. *Armillaria mellea* severely damaged one bed of parsnips and carrots at Kingston. Neck Rot of onions in storage (*Botrytis allii*) and Onion Smudge (*Colletotrichum circinans*) were both recorded for the first time, as also was a *Fusarium* wilt of watermelons.

**Tomatoes.** — Spotted wilt (virus) was generally distributed in both years, being more severe in 1930–31 than in 1931–32. A severe case of non setting of the fruit due to Mosaic was recorded for a glasshouse. *Macrosporium solani* is becoming more prevalent in glasshouses, and *Fusarium lycopersici* was noted in a few houses. The mite *Phyllocoptes lycopersici* was noted on many occasions, both in glasshouses and outdoors, as also was the root-knot nematode (*Heterodera radicicola*).

**Tobacco.** — Downy Mildew or Blue Mould of tobacco (*Peronospora hyoscyami*) was more prevalent in tobacco seedbeds in 1931, and in the autumn of 1932 was found on some field crops. Tomato spotted wilt (virus) usually occurs only on odd plants, but in a small field at Mount Gambier in 1932 more than 30 per cent of the plants were lost from this disease.

**Ornamental Plants.** — Irish blight (*Phytophthora infestans*) was recorded for the first time on seeding petunias in frames in 1931. *Rhizoctonia solani* caused a collar rot of sweet peas in a glasshouse at Marion, which was checked by the application of Cheshunt Mixture. Carnation rust (*Uromyces caryophyllinus*) was recorded for the first time. Hollyhock rust (*Puccinia malvacearum*), marigold rust (*Puccinia calendulae*), and sunflower rust (*Puccinia helianthi*) all occurred more than usual.

### Egypt: Locust Report (1).

No reports were received in March and April 1933 on the appearance of locusts.

Scouting desert regions usually visited by *Schistocerca gregaria* continued. In the latter half of April and early in May a car patrol of the Plant Protection Section inspected the area lying between Lats. 23° 10'–27° 30' and Longs. 33° 35'.

Few scattered individuals of the flaviventris form were found. Some of the valleys were green with vegetation but no breeding was observed.

### Eritrea: The Tropical Migratory Locust (*Locusta migratoria migratorioides*) (2).

During April 1933 no swarm of tropical migratory locust made its appearance in the Colony.

### Réunion: Plant Parasites Newly Recorded in the Island (3).

Before leaving Madagascar on a mission to Paris I made a study tour in Réunion where I found the presence of the following fungus pests which have not to my knowledge been recorded in this Island previously:

Cassava: *Gloeosporium manihotis* Henn.

Maize: *Puccinia maydis* Bér.

Tobacco: *Erysiphe cichoracearum* DC.

Peach: *Puccinia pruni-spinosae* Pers.; *Taphrina deformans* (Berk.) Tul.

*Artocarpus integrifolia*: *Rhizopus artocarpi* Rac.

Papaw: *Ovulariopsis Papayae* n. sp.

French bean: *Colletotrichum lindemuthianum* (Sacc. et Magn.) Br. et Cav.; *Isariopsis griseola* Sacc.

Potato: *Phytophthora infestans* (Mont.) de Bary.

Tomato: *Oidium* sp.

Aubergine: *Cercospora* sp.

*Albizia lebbek*: *Sphacelophragmium acaciae* Cke.

*Erythrina indica*: *Ovulariopsis* sp.

Pigeon pea: *Oidium* sp.

*Jatropha curcas*: *Oidium* sp.

Mulberry: *Phyllactinia corylea* (Pers.) Karst. (*Ovulariopsis moricola* Delacr.).

Oak: *Microsphaera alphitoides* Griff. et Maubl.

(1) Communication from the Chief Entomologist, Plant Protection Section, Ministry of Agriculture, Egypt.

(2) Communication from the official correspondent of the Institute, Dr. Rolando GUIDOTTI, Chief of the Agricultural Bureau of Eritrea, transmitted by the Government of the Colony.

(3) Communication from the official correspondent of the Institute, Mr. G. BOURIQUET, Director of the Phytopathological Laboratory of Nanisana, Tananarive.

**Southern Rhodesia : Locust Invasion 1933 (I).****Monthly Report No. 4, March, 1933.**

The hopper outbreak in the colony has revealed itself more and more clearly during the month under review as of outstanding magnitude. In this respect it far surpasses the heavy outbreak of Brown Locust hoppers following the invasion of the Colony by flying swarms in 1924.

Not only is a larger area of country involved but the distribution of the swarms appears to be considerably denser on the whole.

The weather throughout the month has been warm and dry and the hoppers have continued their development apparently unchecked by either disease or parasites, whilst enemies generally have been comparatively inactive.

**1. *Nomadacris septemfasciata*.**

Hoppers of this species are reported in all stages of development but the great bulk appear to be in the fifth and sixth hopper stages, whilst a few have already obtained wings.

The winged specimens examined to date exhibit a very different coloration from that of the invading swarms last year. The locusts of the invading swarms were intensely red and exhibited few and inconspicuous minor markings. The base of the hind wings was suffused with purple pink producing a reddish flash when the insect took to wing. The newly matured adults of the present generation, if they all adhere to the type examined, are more or less medium light brown in appearance with some red on the head, thorax and legs. The light coloured median stripe on the pronotum is very conspicuous and sharply defined and is continued down the elytra. The pink suffusion at the base of the hind wings is lacking altogether.

**2. *Locusta migratoria migratorioides*.**

A few flying swarms, matured in the low veld and in Portuguese East Africa, have been in evidence during the month and one swarm passed just south of Salisbury flying in a westerly direction.

The destruction of the hoppers of this species on the higher veld seems to have been approximately complete in the N. E. districts but the possibility of confusion with the Red Locust makes the position a little uncertain. The swarms in the low veld were maturing generally at the end of the month.

The newly matured adults of this species examined to date also exhibit a browner and more differentiated coloration than those of the invading swarms last September and November. The median light stripe on the pronotum is also conspicuous and clearly defined and is flanked on either side

(1) Communication from the official correspondent of the Institute, Mr. R. W. JACK, F. E. S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

by a dark brown patch. This stripe was hardly indicated in the invading swarms, which exhibited a nearly uniform brownish red colour, except on the wings.

The prospect in respect to the behaviour of the Migratory Locust in S. Rhodesia during the dry season is at present uncertain. From recent observation in Nigeria (Lean) the swarms are judged to favour a relative humidity of between 60 % and 80 % and to tend to follow zones within this range. Away from the eastern border the relative humidity over most of S. Rhodesia falls below 60 % from June to August or even later and it is possible that the range of the flying swarms will be limited by this factor.

### 3. Direction of Flight.

Most newly matured swarms reported to date have shown a tendency to fly in a more or less westerly or south westerly direction.

### 4. Feeding.

The newly matured swarms, once they have taken to flight, are reported to be feeding voraciously.

### 5. Parasites and Disease.

Neither parasites nor disease have been in evidence during the month.

### 6. Enemies.

No unusual activity of locust enemies is reported anywhere, but hawks have been noted following up flying swarms. Red Mites have been noted on newly matured adults.

### 7. Destruction of Hoppers.

The hopper destruction campaign has been continued vigorously in all infested districts and there has been an incessant demand for more and more poison. The quantity of poison issued up to the end of the month was sufficient to make over four and a half million gallons of spray.

Reliance is still placed on the spraying method. Efforts to introduce the dusting method have met with poor success, one of the main difficulties encountered being lack of wind to distribute the dust. There can be no doubt that in unskilled hands the dusting method is considerably more dangerous than spraying both in respect to stock poisoning and in some degree to the operators. The dusting method also seems to be prodigal of poison compared with spraying.

Baiting experiments have in some cases given good results but the result on the whole has been irregular and the influence of various environmental factors still needs to be elucidated. The indications are at present that baiting is more effective in dry weather than in wet, and it would appear very rash to place much reliance in this method in the light of present indications in view of the fact that locust campaigns in this colony are generally conducted in more or less wet weather.

## 8. Damage to Crops.

Speaking generally the crops of the farmers have been successfully protected from the hopper throughout the colony although individuals have suffered serious damage.

Native crops have suffered in certain areas, which are difficult of access, but have been successfully protected in most of the more accessible localities. Many cases of loss of native crops have been due to the reluctance of the natives themselves to go to any trouble to protect their own gardens even when supplied with material. In certain areas, largely in Matebeleland, the drought has made it immaterial whether locust hoppers attacked the crops or not.

### Tripolitania: Invasion of the Desert Locust (*Schistocerca gregaria*) (1).

The invasion of the desert locust already reported [see this *Bulletin*, 1933, No. 4, p. 82] has up to the present remained within the triangle El Uotia-Agelat-Jefren. All the movements and halts of the insects have been followed by an observation and destruction service in which have participated the civil and military authorities, the troops and the populace. The control campaign which was at first directed against the adults was later directed against the eggs by ploughing and collecting. To encourage the egg collecting a Governatorial Decree was enacted granting an award of 4 liras per kg. of eggs [see this *Bulletin*, 1933, No. 5, p. III].

Up to the present over 100 quintals of eggs have been collected which if they had hatched would have produced hopper bands capable of destroying all the zones of European and native settlements.

A certain amount of hatching has however been reported from eggs which had in spite of all escaped the control operations. But as the breeding centres have been ascertained they will be easy to destroy with complete certainty.

Up to the present, although it is not possible to make forecasts owing to the continued presence of locusts in South Tunisia and in Algeria, the control is being effectively carried out in the Colony.

### Turkey: Destructive Vertebrates (2).

In Asiatic Turkey (Anatolia) as well as in European Turkey rodents are so widespread that nearly every year they cause considerable damage to crops. During 1930-31 they multiplied to such an extent in both parts of the country that they seriously endangered the harvests.

I took this opportunity to have sent to me several hundreds of the rodents collected in the different regions.

(1) Communication from the Government of Tripolitania transmitted to the International Institute of Agriculture by the Italian Ministry for the Colonies (Office of Studies and Propaganda)

(2) Communication from the official correspondent of the Institute, Mr. M. SUREYA, Councillor of State, Ankara.

Part of them I sent to the Zoological Museums of Vienna, Berlin and London for purposes of identification. All have not yet been identified but I can indicate here the names of the species already determined: — *Apodemus flavicollis*, *Microtus lydius*, *M. agrestis*, *M. güntheri*, *Citellus citellus* and *Spalax hungaricus*.

With a view to the control of these rodents the Ministry of Agriculture concentrated the locust control organisation in the regions in which the rodents had made their appearance.

The best season for control work is the winter. Legislative measures compel farmers to take steps to control rodents, locusts and any other pest causing damage by their mass reproduction.

For the control of the rodents poisoned grain and the 'Hora' apparatus have been mainly employed.

The grain is treated with arsenic and strychnine. It was found an effective and economic means of control in various regions. The 'Hora' apparatus, by which asphyxiating gas is introduced into the rodents' burrows, may be used in winter as well as in summer; it is highly efficacious, but costly.

Virus has also been used. Experiments made with this method have given results partly positive and partly negative.

In Anatolia the potato, onion and garlic crops have been attacked by *Spalax* spp. In consequence of the fact that in uncultivated land these rodents raise mounds of earth resembling molehills many farmers attribute to moles the damage done to their fields of potatoes and onions. They use traps as a control measure.

Most satisfactory results have been obtained by burying in the potato fields tubers poisoned with a solution of sodium arsenate.

## LEGISLATIVE AND AMMINISTRATIVE MEASURES

**Germany.** — By Presidential Decree of 16 March 1933 concerning the control of grape phylloxera [*Phylloxera vastatrix*], vine growers who in the course of the anti-phylloxera campaign shall have submitted losses by the destruction or damage of their vines shall be entitled to suitable compensation. (*Nachrichtenblatt für den Deutschen Pflanzenschutzdienst*, Berlin 1933, 13. Jahrg, Nr 5, S. 38).

\*\*\* A Decree of 20 April 1933 with a view to preventing the introduction of the San José scale [*Aspidiotus perniciosus*] contains an amendment to the Decrees of 3 November 1931 and 8 July 1932 [see this *Bulletin*, 1932, No. 2, pp. 24-25 and No. 11, p. 182].

The Minister of Agriculture is authorised, in agreement with the Minister of Finance, to extend to countries other than those now suspected of infection with the San José scale the regulation limiting the importation of live plants and parts of live plants, of fresh fruit and fruit waste to the customs offices expressly authorised for the purpose; he has the right to make importation of such products dependent on an inspection carried out on entry at the expense of the person concerned and which must not reveal the presence or suspected presence

of the San José scale. He may, further, extend the other regulations in force to any other country in which the presence of the San José scale shall be proved (1).

**England and Wales.** — With the object of preventing the introduction of the cherry fruit fly [*Rhagoletis cerasi*], the Importation of Raw Cherries Order of 1933, dated 9 May 1933, regulates the importation of raw cherries grown in France, Italy and Germany into England and Wales during the 1933 season. ([Ministry of Agriculture and Fisheries]. The Importation of Raw Cherries Order of 1933. Dated 9th May, 1933. [London, 1933], 4 pp. Mimeographed).

**Argentine Republic.** — By Presidential Decree of 22 August 1932, *Wedelia glauca* — a Composite known in different zones of the Republic under the common names of 'sunchillo', 'suncho', 'flor de sapo', 'yuyo', 'yerba de sapo' or 'chilquilla' — has been declared a noxious weed. (Ministerio de Obras Públicas. *Boletín de Agricultura de la Provincia de Córdoba*, Córdoba, Julio a Diciembre de 1932, año XIII, núm. 139, pág. 47).

\* \* By another Presidential Decree of the same date *Pseudomonas* [*Bacterium*] *Savastanoi*, the causal agent of the bacterial tumours of the olive, has been declared an agricultural scourge (*Ibid.*, pág. 47).

**Argentine Republic (Province of Córdoba).** — By Decrees Nos. 15301 and 15560, series C, of 8 September and 28 October 1932, the personnel of the provincial administration is expected to lend its assistance to the Officials of the 'Defensa Agrícola Nacional' for the control of agricultural pests and particularly of locusts. (Ministerio de Obras Públicas. *Boletín de Agricultura de la Provincia de Córdoba*, Córdoba, Julio a Diciembre de 1932, año XIII, núm. 139, págs. 43 y 44).

**Western Australia.** — In virtue of a By-law made and passed by the Koorda Road Board on 8 November 1932 and approved by the Lieut. Governor and Administrator in Executive Council on 5 January 1933, every owner and every occupier of land upon which the noxious weeds known as Spanish radish (*Raphanus raphanistrum*) and wild turnip (*Brassica tournefortii*) are growing shall, before the 15th day of July in each year, thoroughly destroy such noxious weeds by uprooting, or by such other means as the Board may direct, to the satisfaction of the Board. (*Government Gazette of Western Australia*, Perth, 20 January 1933, No. 3, p. 98).

\* \* On 27 January 1933 the Lieut. Governor and Administrator in Executive Council revoked the declaration of *Watsonia* as a noxious weed within the boundaries of the following Road Districts : — namely, Canning, Gosnells, Murray,

(1) Communication from the Biologische Reichsanstalt für Land- und Forstwirtschaft, Berlin-Dahlem, official correspondent of the Institute.

Capel, Manjimup, Harvey, and Balingup Road Districts [see this *Bulletin*, 1933, No. 1, p. 11], and also approved of *W. angusta* being declared a noxious weed within the boundaries of each and all of the said Road Districts. (*Ibid.*, 3 February 1933, No. 7, p. 213).

**Belgium.** — By Ministerial Decree of 10 April 1933 any person finding the presence of the Colorado beetle (*Leptinotarsa decemlineata*) in his crops or warehouses is required immediately to inform the Burgomaster of the Commune. The latter will inform the Minister of Agriculture by telegraph.

The crops declared infested with Colorado beetle will be submitted to the treatments prescribed by the Minister of Agriculture or his agent.

The same regulation may be applied to the crops surrounding the land declared to be infested with the Colorado beetle.

The organisation of the control against this insect is placed under the direction of a special Commission called the 'Comité antidoryphorique'.

Offences under the present Decree will be punishable by the penalties provided in Art. 21 of the Royal Decree of 13 May 1929.

If the application of these regulations shall have caused serious losses to the farmer of the land the Minister of Agriculture may decide to grant compensation. (*Monteur Belge*, Bruxelles, 29 avril 1933, 103<sup>ème</sup> année, n° 119, p. 2258-2259).

**United States of America.** — By Quarantine No. 69 approved 20 February 1933, on and after 1 July 1933, the following plants and plant products, when used as packing materials, are prohibited entry into the United States from the countries and localities named :—

- (a) Rice straw, hulls, and chaff, from all countries.
- (b) Corn and allied plants (maize, sorghum, broomcorn, sudan grass, napier grass, Job's tears, teosinte, *Polytoca*, *Sclerachne*, *Chionachne*); all parts, from all countries except Mexico, and the countries of Central America, the West Indies, and South America.
- (c) Cotton and cotton products (lint, waste, seed cotton, cottonseed and cottonseed hulls); from all countries.
- (d) Sugarcane: all parts of the plant including bagasse, from all countries.
- (e) Bamboo, leaves and small shoots, from all countries.
- (f) Leaves of plants; from all countries.
- (g) Forest litter; from all countries.
- (h) Soil containing an appreciable admixture of vegetable matter, from all countries, except such types of soil or earth as are authorized as safe for packing (peat, peat moss, *Osmunda* fibre).

On and after 1 July 1933, the following plants and plant products, when used as packing materials, will be permitted entry into the United States from the countries and localities named only in accordance with the rules and regulations promulgated supplemental to this quarantine:

- (a) Cereal straw, chaff, and hulls, other than rice (such as emmer, spelt, oats, barley, and rye); from all countries.



(b) Corn and allied plants (maize, sorghum, broomcorn, sudan grass, napier grass, Job's tears, teosinte, *Polytoca*, *Sclerachne*, *Chionachne*); all parts, from Mexico and the countries of Central America, the West Indies and South America.

(c) Willow twigs; from Europe.

(d) Grasses and hay and similar indefinite dried or cured masses of grasses, weeds, and herbaceous plants; from all countries.

(e) Soil containing an appreciable admixture of vegetable matter, from all countries, which is authorized as safe for packing. (Quarantine on packing materials. *U. S. Department of Agriculture. Office of Information Press Service*, Washington, D. C., February 23, 1933, 7 pp.).

**France.** — By Decree of 5 April 1933 the wording of Art. 2 of the Decree of 8 March 1932 relating to the San José scale (*Aspidiotus perniciosus*) [see this *Bulletin*, 1932, No. 4, p. 57] is replaced by the following :—

Art. 2. — Importation into France of the products referred to in the preceding article, but originating in and coming from countries other than those affected by the prohibition contained in the same article, is authorised only if the consignments are accompanied by a statement from the competent administrative authority of the country of origin indicating the place of production. When necessary Orders by the Minister of Agriculture will specify the plants or plant parts for which such a statement is not required. (*Journal Officiel de la République Française*, Paris, 15 avril 1933, LXV<sup>ème</sup> année, n° 90, p. 3883).

\* \* By Ministerial Decree of 20 April 1933 has been instituted at the Ministry of Agriculture, Direction of Agriculture, a Commission charged with the study of the conditions of the organisation and inspection of crops and plants of seed potatoes regularly submitted to phytosanitary control by the State. (*Journal Officiel de la République Française*, Paris, 22 avril 1933, LXV<sup>ème</sup> année, n° 95, p. 4217).

**Italy** (1). — By Letter No. 13612 of 29 March 1933 addressed to the Directors of the Itinerant Schools of Agriculture ('Cattedre ambulanti d'Agricoltura') and relating to the preventive defence against the Colorado potato beetle [*Leptinotarsa decemlineata*], the Minister of Agriculture and Forests prescribes that, in addition to the rigorous supervision exercised by the Phytopathological Observatories responsible for phytosanitary control at the frontier customs offices, a special supervision of the potato crops shall be exercised by the persone of the said Schools.

\* \* By Ministerial Decree of 15 May 1933, an obligatory Consortium (Syndicate) of the olive growers of the Province of Spezia has been formed, which has among other purposes that of carrying out the control of diseases and pests of the olive. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 26 maggio 1933, anno 74<sup>o</sup>, n. 122, p. 2212).

(1) Communication from the Ministry of Agriculture and Forests.

**Morocco (French Zone).** — By Decree of the Director General of Agriculture, Trade and Land Settlement, dated 31 March 1933, the importation or transit of products or commodities enumerated in article 5 of the Dahir of 20 September 1927, relating to the sanitary police regulation of plant products in the French Zone of the Sherifian Empire, can be effected only through the ports of Casablanca, Port-Lyautey and the frontier post of Oujda.

Following on the sanitary inspection of the said products or commodities, carried out at their entry into the French Zone of the Sherifian Empire, a report is drawn up by the Officer of the 'Défense des Cultures' in charge of the inspection. This document which must be forwarded to the consignee or to his representative includes a statement of the disinfection or of the fumigation, if such has proved necessary.

In the event of its having proved necessary to destroy or to return to the consignor the products or commodities, the Customs office informs the consignee or his representative of the fact.

In the case of any destruction of commodities or products a full report must be drawn up.

The products or commodities enumerated in paragraph 1 of article 5 of the Dahir aforementioned, with the exception of seeds, fruits and vegetables other than potatoes, tomatoes or aubergines must be accompanied by:—

(1) a copy, certified as exact, of the invoice of the consignment, stating:—

(a) the botanical species and varieties included in the consignment;

(b) the name and address of the sender and of the establishment from which the material comes;

(c) the name and address of the consignee;

(d) the weight of the packages, as well as the marks and numbers affixed, and their contents in each case;

(2) a certificate of sanitary inspection in full accordance with the model certificate annexed to the present Decree.

The provisions of the Decree of 19 February 1931 are annulled, with the exception of the prescriptions of the last paragraph of article 4 which remain in force for three months from the date of the promulgation of the present text. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 21 avril 1933, XXII<sup>ème</sup> année, n° 1069, p. 373).

\* \* By Decree of the Director General of Agriculture, Trade and Land Settlement, dated 1 April 1933, consignments of tomatoes, aubergines and potato tubers intended for the French Zone of the Sherifian Empire or requiring transit through it must be accompanied by a certificate of sanitary inspection in accordance with the model certificate annexed to the present Decree as well as by a duplicate of the invoices referring to the consignment.

On these documents statements must be made, in addition to those in regard to the description of the consignment and the place of cultivation, as to the variety to which the potatoes, tomatoes or aubergines belong, as well as the name, address and mark of the sender and the name and address of the consignee.

The certificates of sanitary inspection should also attest that the accompanying consignments of potatoes, tomatoes or aubergines, come from crops situated more than twenty kilometres from the fields infested by Colorado beetle (*Leptinotarsa decemlineata*) or by wart disease (*Synchytrium endobioticum*).

Consignors of potatoes, tomatoes and aubergines should include in their consignments only packages of which the packing materials, wrappings, containers, sacks, canvases, boxes, barrels, cases, baskets, and in general any material other than the tubers and vegetables in question, are strictly new.

Apart from the ports or the frontier post specified in the Decree of 31 March 1933 relating to the sanitary police regulation of plant products, consignments of potatoes may be imported by the ports of Rabat, Mazagan, Safi and Mogador, when the consignments in question do not weigh less than 20 quintals.

Whenever fumigation or disinfection is ordered by the Officer in charge of the sanitary inspection, the consignments are, as the consignee prefers, sent back to the consigner or forwarded by sea to the ports of Casablanca or Port-Lyautey.

Consignments including packages not complying with the provisions of the present Decree are sent back as a whole. This measure is without prejudice to the application of the provisions of the Dahir of 20 September 1927, relating to the sanitary police regulation of plant products, and of the provisions of the Decrees issued in application of the said Dahir.

The provisions of the present Decree will come into force three months after promulgation.

The provisions of the Decrees of 25 May 1928, 9 November 1928 and 15 June 1929 as well as the last paragraph of Article 4 of the Decree of 19 February 1931, will be annulled on that date. (*Ibid.*, p. 373-374).

\* \* A Decree of the Director General of Agriculture, Trade and Land Settlement, dated 4 April 1933, fixes the tariff of charges due for the costs of fumigation of plant products for importation. (*Ibid.*, p. 374-375).

\* \* By Decree of the Director of Waters and Forests, dated 7 April 1933, owners or holders of land included within certain zones of the region of Meknès are authorised until 2 September 1933 to destroy by any means except fire rabbits which are causing damage to their crops. (Empire Chérifien. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 14 avril 1933, XXII<sup>ème</sup> année, n° 1068, p. 346).

Greece (1). — The Presidential Decree of 24 March 1933 published in No. 81 (29 March 1933) of the Official Journal, which came into force on 29 April 1933, prescribes as follows :—

Art. 1. — § 1. — The importation and transit in the Republic of potatoes and parts of potatoes, also of bags and other packings which have served for

(1) Communication from the official correspondent of the Institute, Mr. A. AYOUTANTIS, Chief of the Phytopathological Section of the Ministry of Agriculture, Athens.

their transport and storage, coming from countries attacked by the Colorado beetle (*Doryphora* [*Leptinotarsa*] *decemlineata*) or by wart disease (*Synchytrium endobioticum*) are forbidden.

§ 2. — Importation and transit in the Republic of potatoes coming from countries other than those affected by the ban contained in the preceding paragraph are authorised on the following conditions :—

(a) If the potatoes are packed the packing materials (bags, baskets, boxes, etc.) must be new and sealed by the official Plant Protection Service of the country of origin.

If the potatoes are transported by rail the wagons must be closed and sealed as above.

(b) Each consignment of potatoes must be accompanied by two copies of the certificate of health and origin issued in conformity with the model annexed to the present Decree, in the language of the country of origin and in French, or officially translated into Greek ; one of the two copies shall remain at the Customs Office by which the entry and transit of the potatoes were effected and the other shall accompany the consignment \*.

This certificate must not have been issued more than 20 days before the date of the loading of the potatoes.

The foreign authorities issuing the certificate must then send the original to the Ministry of Agriculture (Phytopatological Section) at Athens.

For importations of potatoes effected by rail the two copies of the certificate of health and origin must be annexed to the way-bill.

If a consignment includes several wagons, each wagon must be accompanied by two copies of the certificate issued for each wagon separately.

§ 3. — The importation of potatoes coming from a country free from the Colorado beetle and wart disease, but having crossed a country infected with this insect or fungus, is authorised on condition that they are packed and sealed by the official Plant Protection Service of the country of origin.

If they are transported by rail the formalities specified in the preceding paragraph, will be applicable.

§ 4. — The frontier Customs Offices, in the case of transport by land, or of the ports in the case of transport by sea, will forbid the entry and transit of potatoes, their parts, packings, etc., if the consignments do not comply absolutely with the conditions of the present Decree.

§ 5. — The entry and transit of potatoes in the Republic may take place only by the Customs Office of Eidomeni and by the ports of Piraeus, Salonica and Patras.

§ 6. — The countries at present considered as infested by the Colorado beetle are France, exclusive of the French Colonies and Corsica, the United States of America and Canada.

§ 7. — The countries at present considered infected with wart disease are Austria, Belgium, France, Germany, Denmark, Switzerland, Ireland, the Netherlands, Great Britain, Norway, Poland, Sweden, Czechoslovakia and Finland.

\* The model certificate referred to in the present Decree corresponds to that annexed to the International Convention for Plant Protection (Rome, 16 April 1929) [see this *Bulletin*, 1929, No. 4, p. 55].

Art. 2. — The entry of live plants and parts of live plants, of bulbs, of rhizomes and tubers (other than potatoes), on condition that they do not fall under the prohibitions contained in the measures in force against grape phylloxera [*Phylloxera vastatrix*], is authorised only if each consignment is accompanied by an official certificate of the country of origin stating that the products are free from Colorado beetle and that this beetle does not exist in the region where the products were grown nor within a radius of 100 kilometres.

Art. 3. — The importation of seed potatoes is allowed whatever their origin on the following conditions :—

(1) A permit from the Ministry of Agriculture must be obtained in advance ;

(2) The potatoes must be packed ;

(3) The packings must be absolutely new ;

(4) Each package must be sealed by the official Plant Protection Service of the country of origin ;

(5) Each consignment must be accompanied by a certificate of health and origin complying with the conditions contained in Art. 1 of the present Decree, by a statement from the firm supplying the seed potatoes specifying, in addition to the particulars of the consignment, the variety of the potato, and by a declaration that the potatoes are good for planting.

Art. 4. — The Ministry of Agriculture reserves the right to have the potatoes for import and the products specified in Art. 2 of the present Decree inspected by special officials, even in cases in which they comply with all the conditions of the said article.

If it results from this inspection that the potatoes or other products are carriers of the Colorado beetle, of the potato tuber moth (*Phthorimaea operculella*) or of wart disease these products will be either returned within 15 days at the expense of the importer, or submitted to disinfection also at the expense of the importer, whenever this measure shall be judged sufficient and the means of disinfection are available in the port of entry, or shall be destroyed, again at the expense of the importer, without any compensation being payable.

The destruction shall take place immediately if storage of the potatoes is considered dangerous, or after 15 days.

The destruction will be carried out in conformity with the regulations of Art. 2 of Law 217.

**Saar Basin.** — The Notice of 30 November 1932 referring to the Police Ordinance of 17 August 1932 [see this *Bulletin*, 1933, No. 2, pp. 36-37] which purposes to prevent the introduction of the Colorado potato beetle [*Leptinotarsa decemlineata*], establishes that by winter months is intended the period from 25 September of one year to 15 May of the following year. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. April 1933, Bd. IV, Nr. 6, S. 228).

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## NOTES

**Congress for the Sanitary Defence of Plants.** — This Congress, which is being organised by the National League for the Control of Crop Diseases and Pests -- 5, Avenue de l'Opéra -- will take place in Paris on 25, 25 and 26 January 1934

The Congress will be supplemented by an Exhibition of apparatus and products used in the control of crop diseases and pests which will remain open from 23-28 January 1934

The main purpose of this Congress is to facilitate the popularisation by the experts of good control means and their methods of application







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